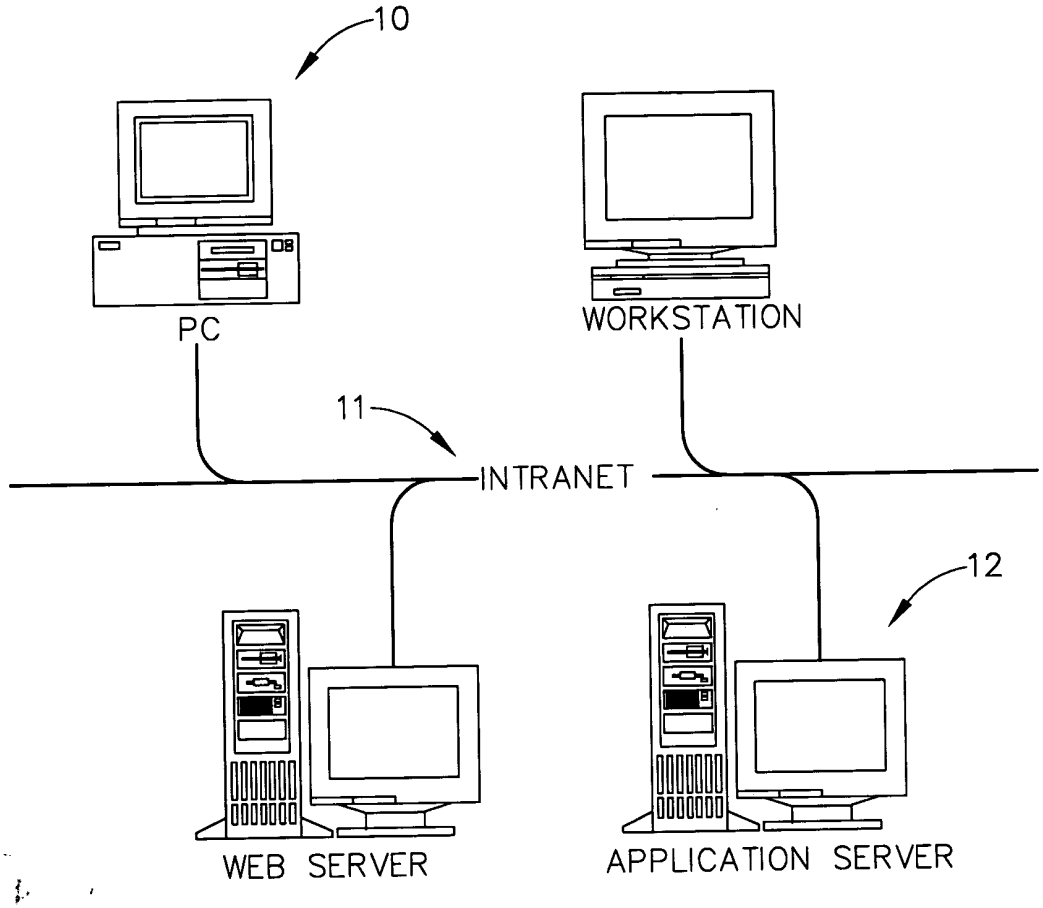


FIG. 1

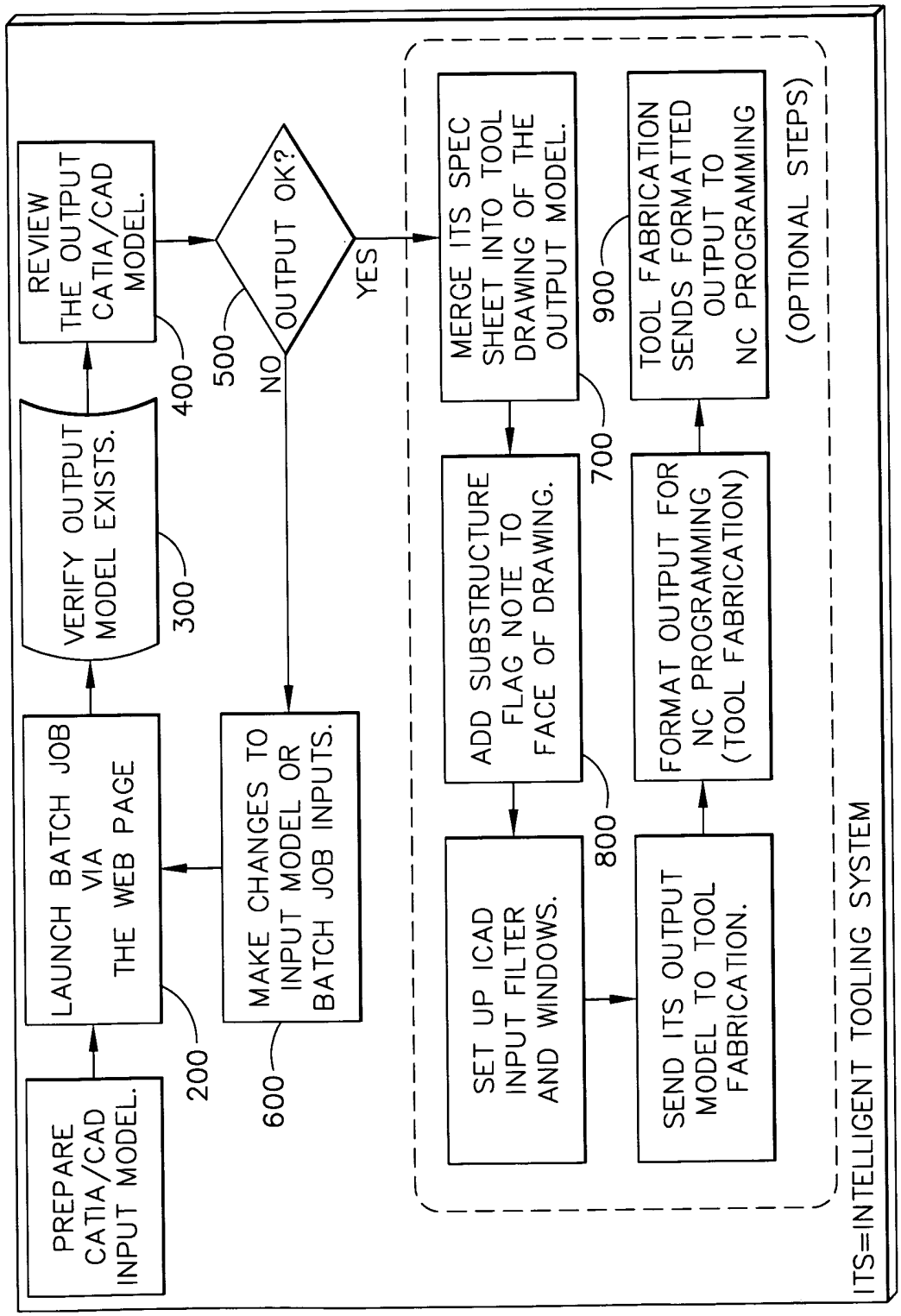

PREPARE CATIA/CAD INPUT MODEL.
LAUNCH BATCH JOB VIA THE WEB PAGE
200
VERIFY OUTPUT MODEL EXISTS.
300
REVIEW THE OUTPUT CATIA/CAD MODEL.
400
OUTPUT OK?
500
NO
YES
MAKE CHANGES TO INPUT MODEL OR BATCH JOB INPUTS.
600
MERGE ITS SPEC SHEET INTO TOOL DRAWING OF THE OUTPUT MODEL.
700
ADD SUBSTRUCTURE FLAG NOTE TO FACE OF DRAWING.
800
SET UP ICAD INPUT FILTER AND WINDOWS.
SEND ITS OUTPUT MODEL TO TOOL FABRICATION.
FORMAT OUTPUT FOR NC PROGRAMMING (TOOL FABRICATION)
TOOL FABRICATION SENDS FORMATTED OUTPUT TO NC PROGRAMMING
900
(OPTIONAL STEPS)
ITS=INTELLIGENT TOOLING SYSTEM

FIG. 2

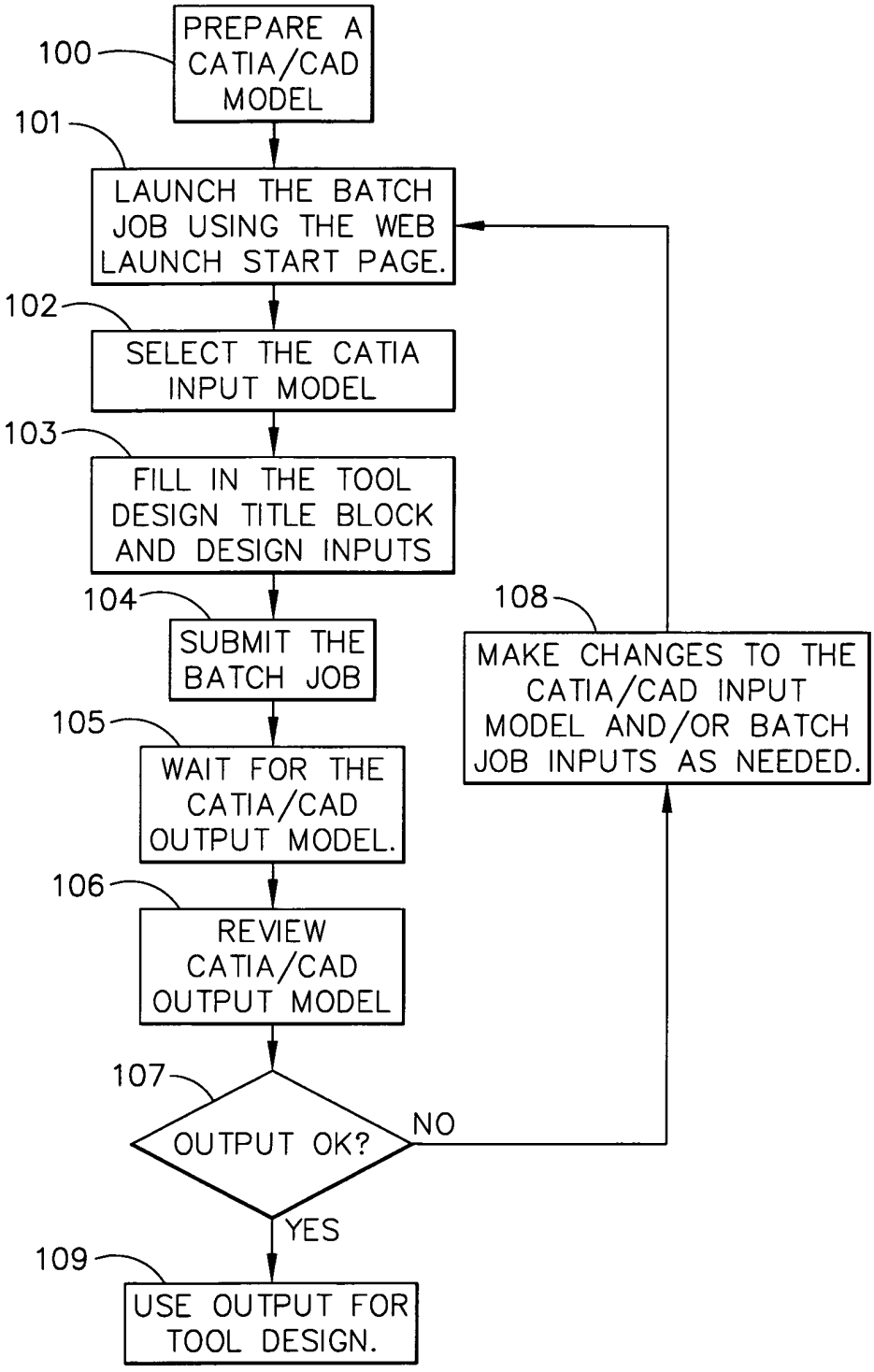

100
PREPARE A CATIA/CAD MODEL
101
LAUNCH THE BATCH JOB USING THE WEB LAUNCH START PAGE.
102
SELECT THE CATIA INPUT MODEL
103
FILL IN THE TOOL DESIGN TITLE BLOCK AND DESIGN INPUTS
104
SUBMIT THE BATCH JOB
105
WAIT FOR THE CATIA/CAD OUTPUT MODEL.
106
REVIEW CATIA/CAD OUTPUT MODEL
107
OUTPUT OK?
NO
YES
108
MAKE CHANGES TO THE CATIA/CAD INPUT MODEL AND/OR BATCH JOB INPUTS AS NEEDED.
109
USE OUTPUT FOR TOOL DESIGN.

FIG. 3

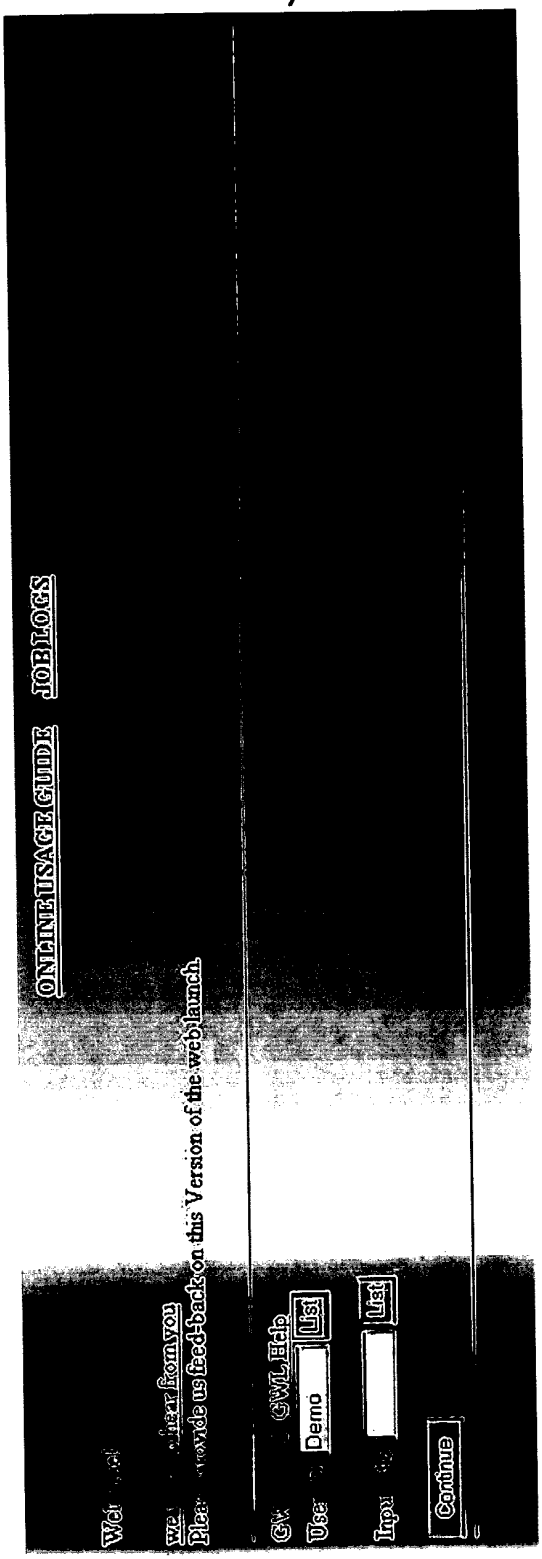

ONLINE USAGE GUIDE
JOB LOGS
We
We
Please provide us feed back on this Version of the web launch.
GW
GWL Help
User
Demo
List
Input
List
Continue

FIG. 4

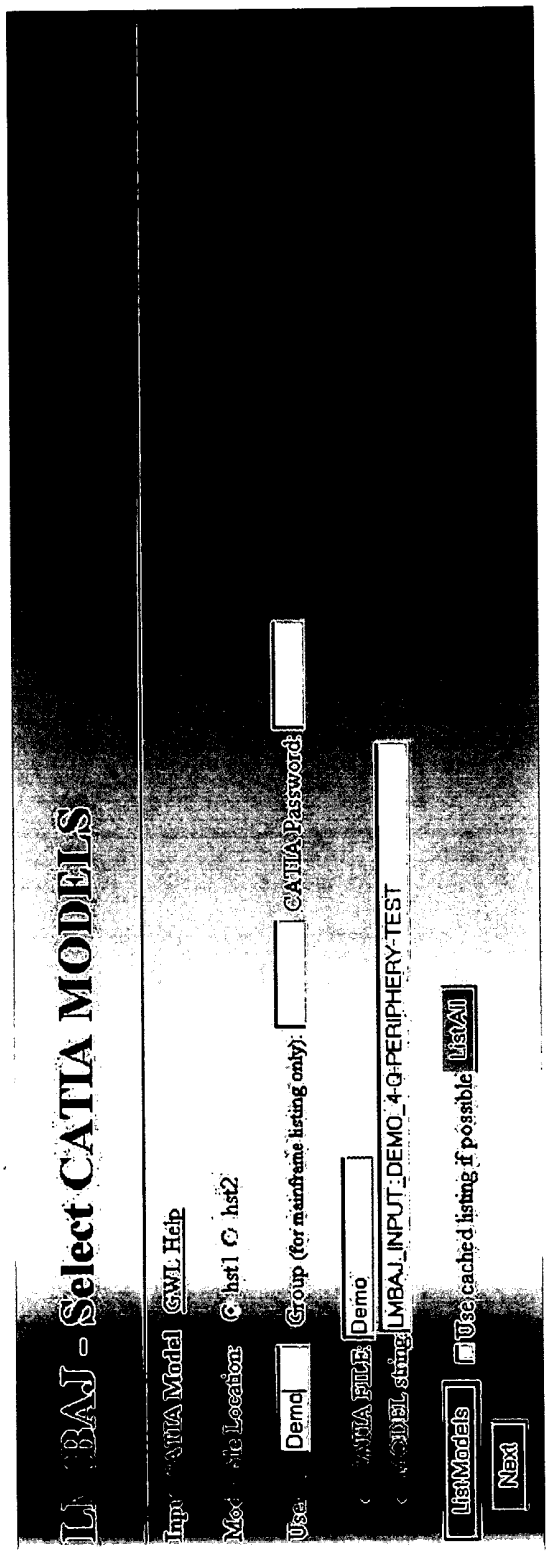

LMBAJ - Select CATIA MODELS
Input: CATIA Model CWL Help
Model Location: hst1 hst2
User: Demo Group (for mainframe listing only): CATIA Password:
CATIA FILE: Demo
CMDL string: LMBAJ_INPUT_DEMO_4-0-PERIPHERY-TEST
ListModels Use cached listing if possible ListAll
Next

FIG. 5

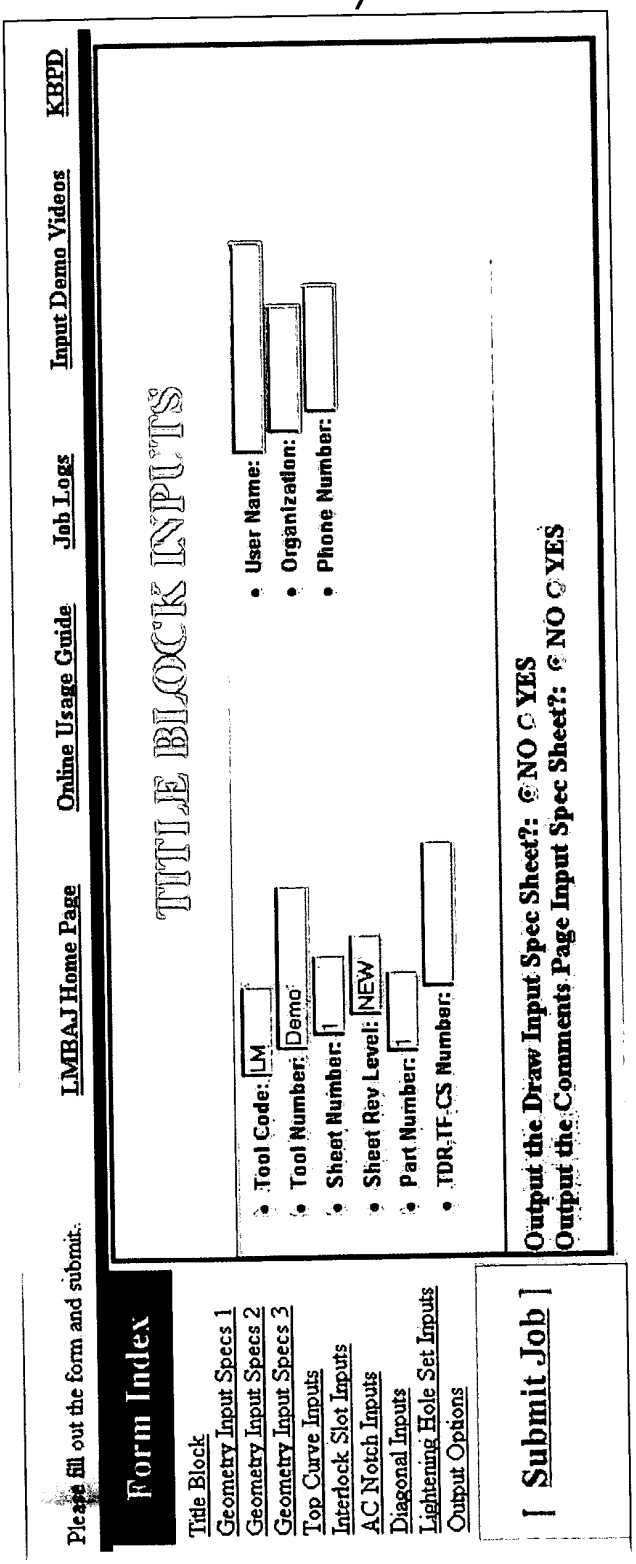
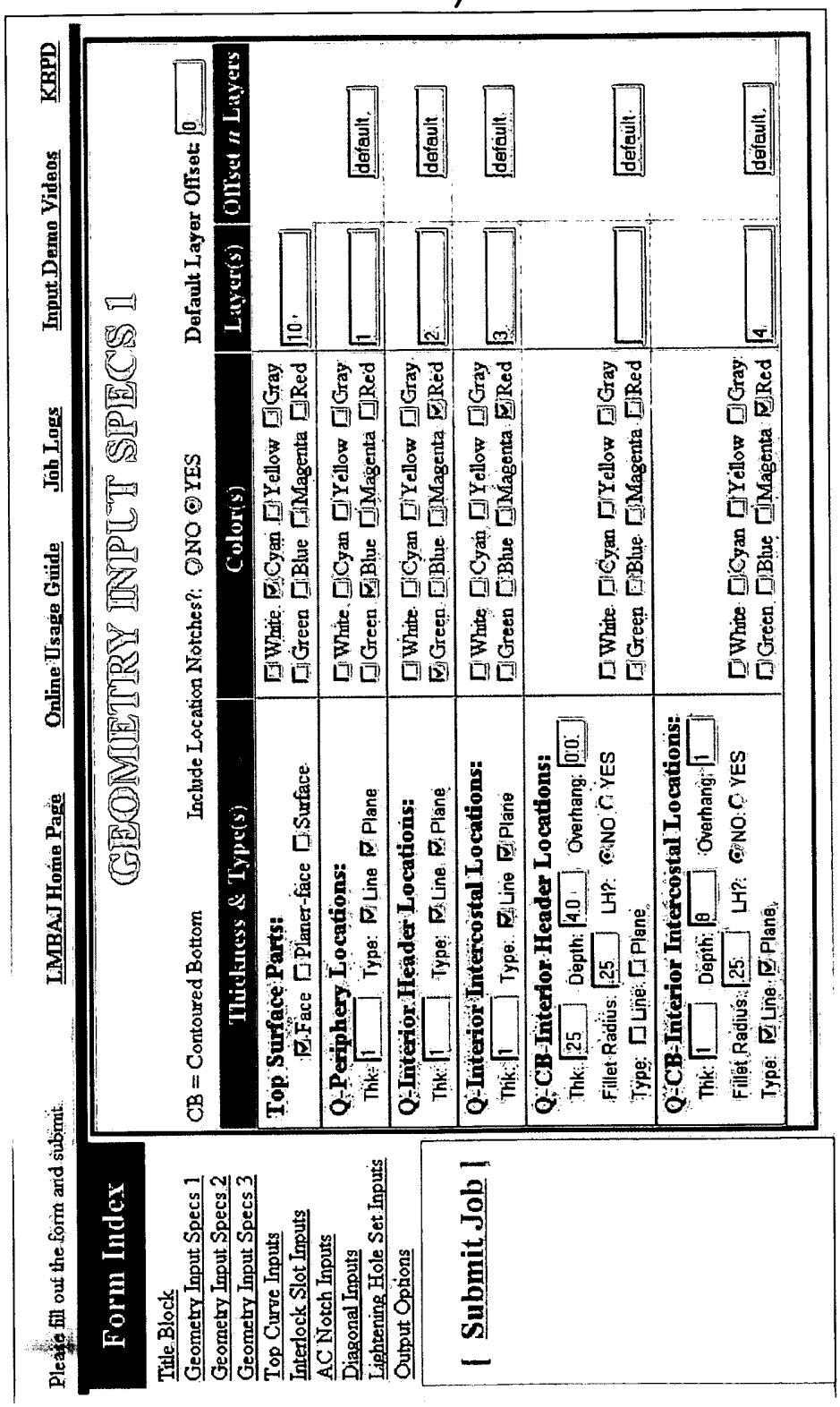

LMBAJ Home Page
Online Usage Guide
Job Logs
Input Demo Videos
KBPD
Please fill out the form and submit.
Form Index
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
TITLE BLOCK INPUTS
Tool Code: LM
Tool Number: Demo
Sheet Number: 1
Sheet Rev Level: NEW
Part Number: 1
TDR;TF;CS Number:
User Name:
Organization:
Phone Number:
Output the Draw Input Spec Sheet?: NO YES
Output the Comments Page Input Spec Sheet?: NO YES

FIG. 6


Please fill out the form and submit.
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Geometry Input Specs 3
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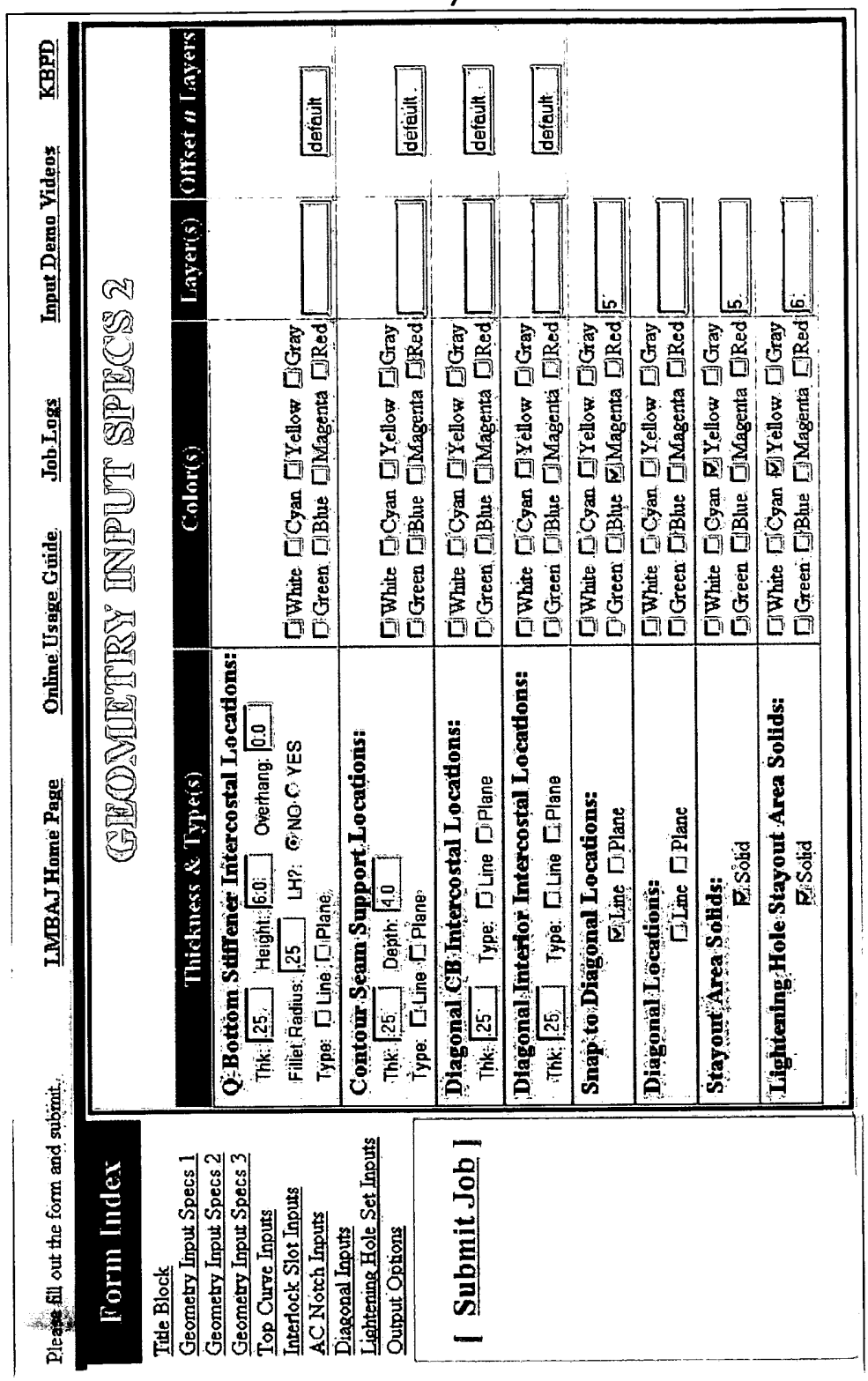
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
GEOMETRY INPUT SPECS 1
CB = Contoured Bottom
Include Location Notches?: NO YES
Default Layer Offset: 0
Thickness & Type(s)
Color(s)
Layer(s)
Offset n Layers
Top Surface Parts:
Face Planer-face Surface
White Cyan Yellow Gray
Green Blue Magenta Red
10
Q-Periphery Locations:
Thk: 1 Type: Line Plane
1
default
Q-Interior Header Locations:
2
Q-Interior Intercostal Locations:
3
Q-CB-Interior-Header Locations:
Thk: .25 Depth: 4.0 Overhang: 0.0
Fillet Radius: .25 LH?: NO YES
Type: Line Plane
Q-CB-Interior Intercostal Locations:
Thk: 1 Depth: 8 Overhang: 1
4

FIG. 7


Please fill out the form and submit.
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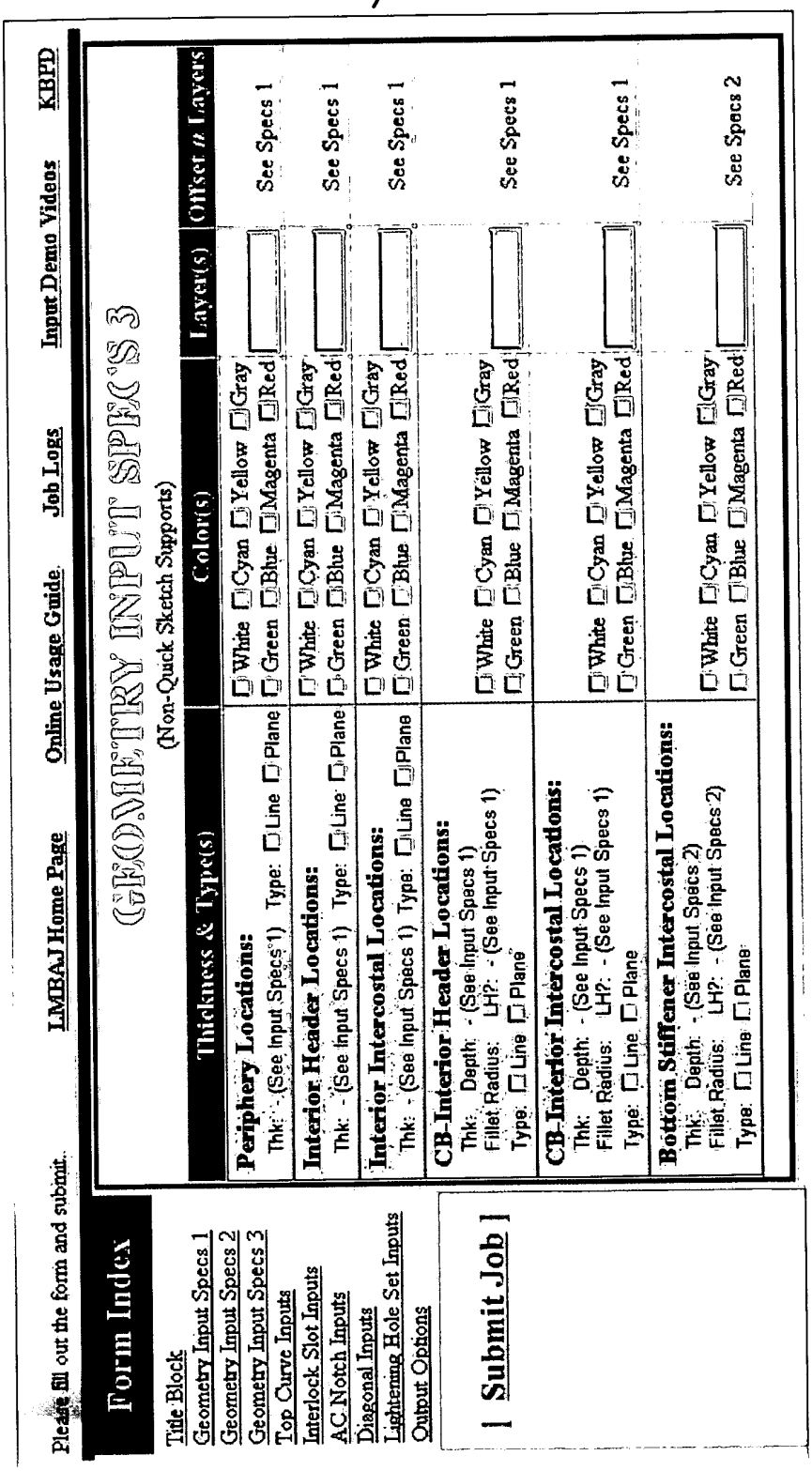
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
GEOMETRY INPUT SPECS 2
Thickness & Type(s)
Color(s)
Layer(s)
Offset # Layers
Q-Bottom Stiffener Intercostal Locations:
Thk: 25 Height: 6.0 Overhang: 0.0
Fillet Radius: 25 LH?: NO YES
Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
default
Contour Seam Support Locations:
Thk: 25 Depth: 4.0
Type: Line Plane
Diagonal CB Intercostal Locations:
Thk: 25 Type: Line Plane
Diagonal Interior Intercostal Locations:
Thk: 25 Type: Line Plane
Snap-to Diagonal Locations:
Line Plane
5
Diagonal Locations:
Line Plane
Stayout Area Solids:
Solid
Lightening Hole Stayout Area Solids:
Solid
6

FIG. 8


Please fill out the form and submit.
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Title Block
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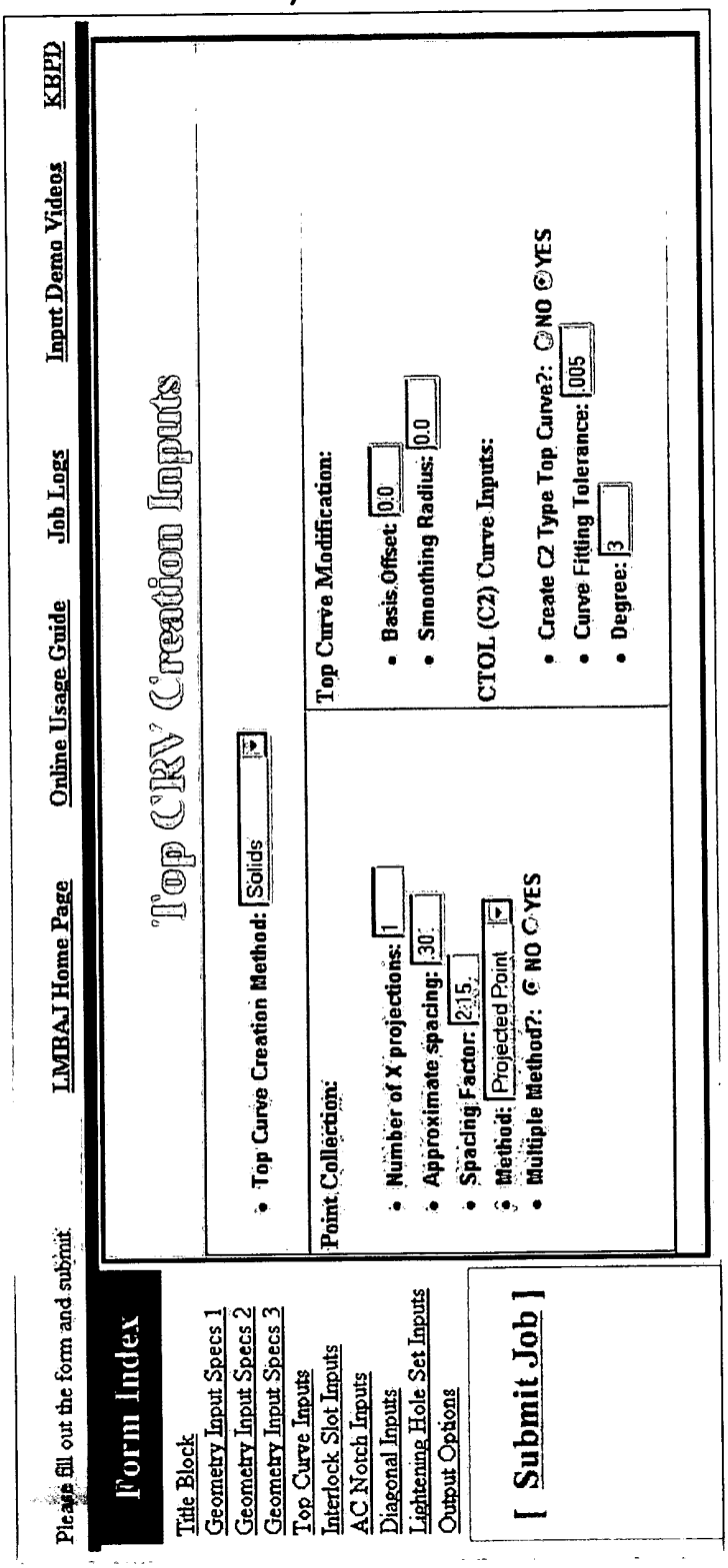
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
Submit Job
GEOMETRY INPUT SPECS 3
(Non-Quick Sketch Supports)
Thickness & Type(s)
Color(s)
Layer(s)
Offset # Layers
Periphery Locations:
Thk: - (See Input Specs 1) Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
See Specs 1
Interior Header Locations:
Thk: - (See Input Specs 1) Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
See Specs 1
Interior Intercostal Locations:
Thk: - (See Input Specs 1) Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
See Specs 1
CB-Interior Header Locations:
Thk: Depth: - (See Input Specs 1)
Fillet Radius: LH?: - (See Input Specs 1)
Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
See Specs 1
CB-Interior Intercostal Locations:
Thk: Depth: - (See Input Specs 1)
Fillet Radius: LH?: - (See Input Specs 1)
Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
See Specs 1
Bottom Stiffener Intercostal Locations:
Thk: Depth: - (See Input Specs 2)
Fillet Radius: LH?: - (See Input Specs 2)
Type: Line Plane
White Cyan Yellow Gray
Green Blue Magenta Red
See Specs 2

FIG. 9


Please fill out the form and submit
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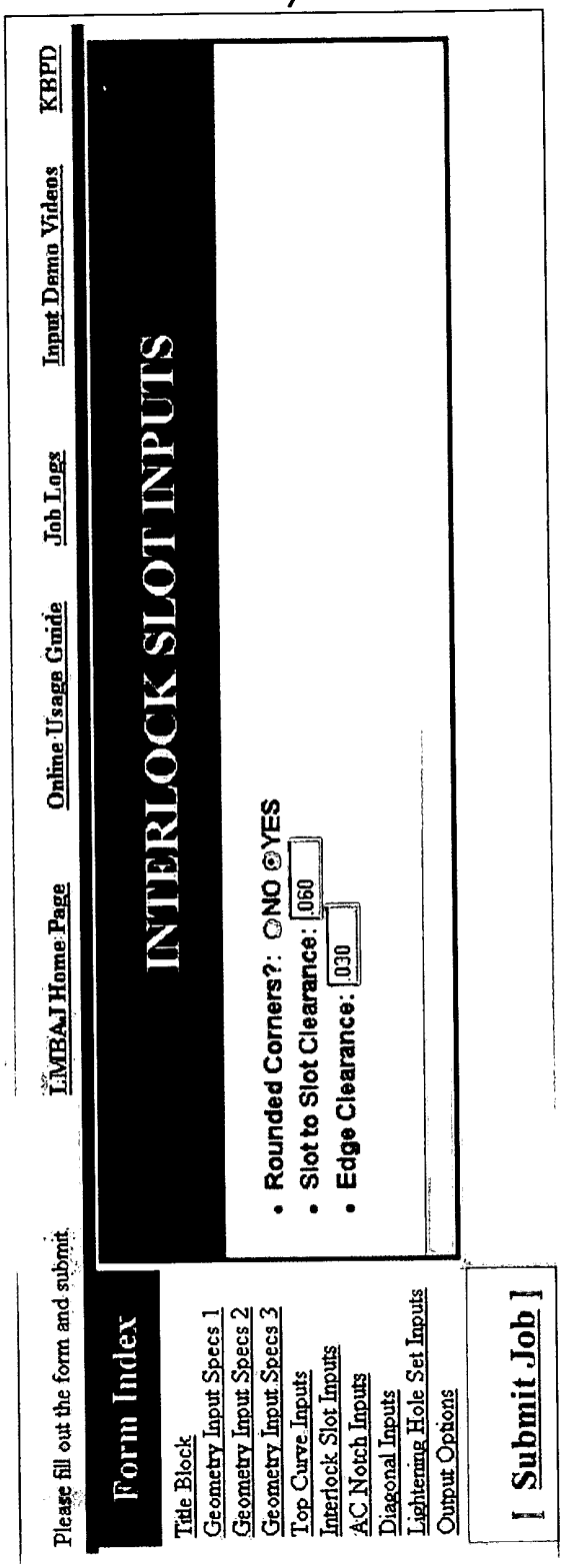
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
Top CRV Creation Inputs
Top Curve Creation Method: Solids
Point Collection:
Number of X projections: 1
Approximate spacing: 30
Spacing Factor: 2.15
Method: Projected Point
Multiple Method?: NO YES
Top Curve Modification:
Basis Offset: 0.0
Smoothing Radius: 0.0
CTOL (C2) Curve Inputs:
Create C2 Type Top Curve?: NO YES
Curve Fitting Tolerance: .005
Degree: 3

FIG. 10A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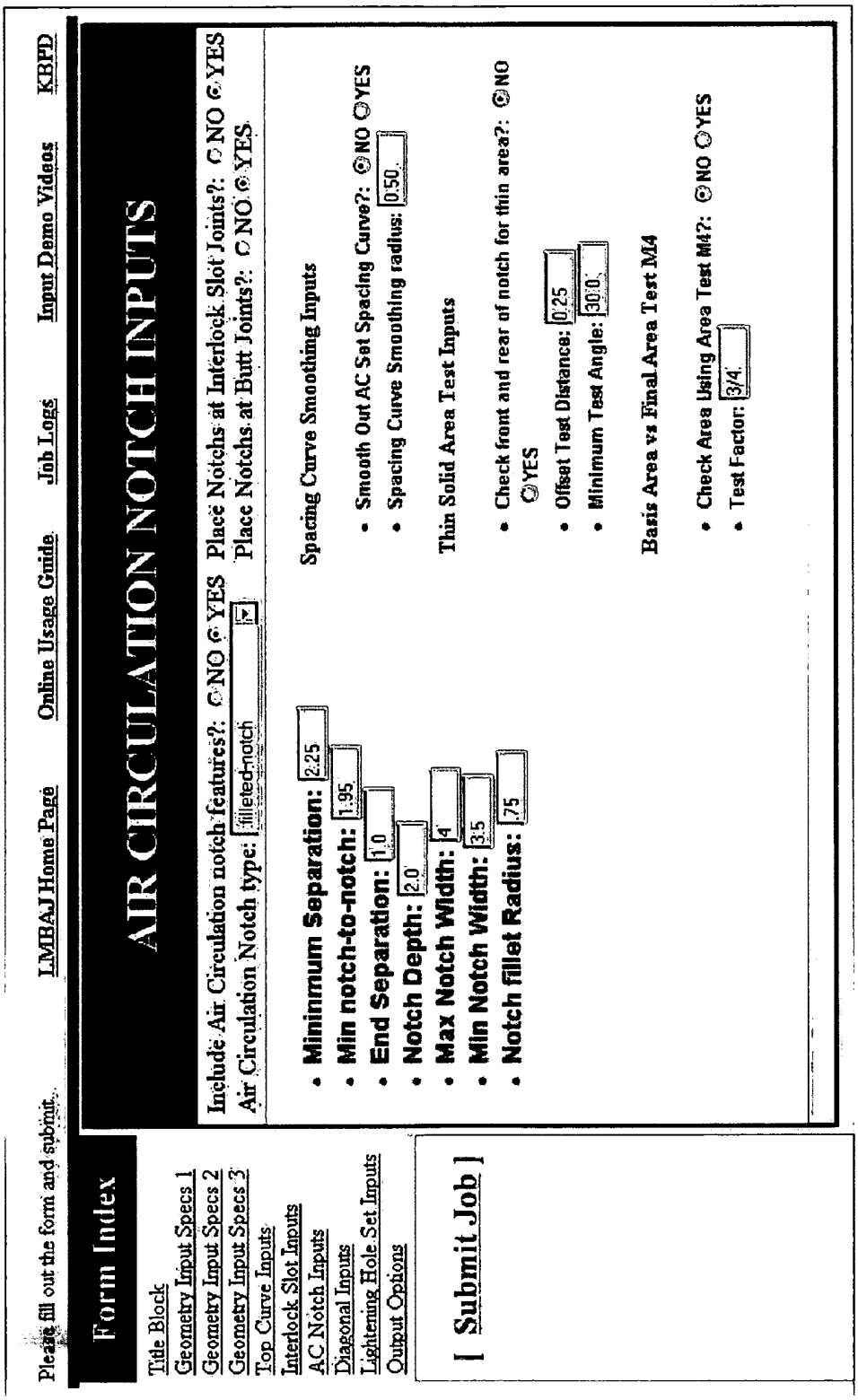
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
Submit Job 1
INTERLOCK SLOT INPUTS
• Rounded Corners?: ○NO ◉YES
• Slot to Slot Clearance: .060
• Edge Clearance: .030

FIG. 10B


Please fill out the form and submit.
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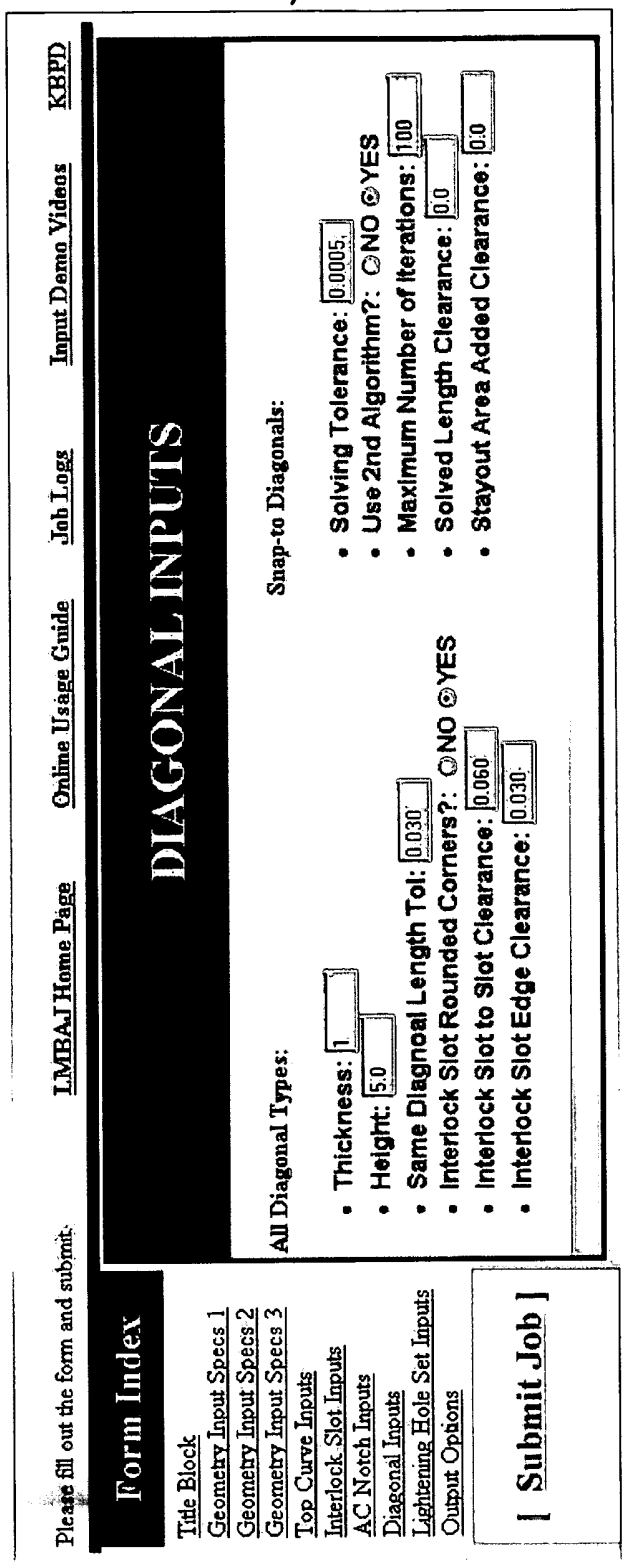
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
AIR CIRCULATION NOTCH INPUTS
Include Air Circulation notch features?: NO YES
Air Circulation Notch type: filleted-notch
Place Notchs at Interlock Slot Joints?: NO YES
Place Notchs at Butt Joints?: NO YES
Minimum Separation: 2.25
Min notch-to-notch: 1.95
End Separation: 1.0
Notch Depth: 2.0
Max Notch Width: 4
Min Notch Width: 3.5
Notch fillet Radius: .75
Spacing Curve Smoothing Inputs
Smooth Out AC Set Spacing Curve?: NO YES
Spacing Curve Smoothing radius: 0.50
Thin Solid Area Test Inputs
Check front and rear of notch for thin area?: NO YES
Offset Test Distance: 0.25
Minimum Test Angle: 30.0
Basis Area vs Final Area Test M4
Check Area Using Area Test M4?: NO YES
Test Factor: 3/4

FIG. 10C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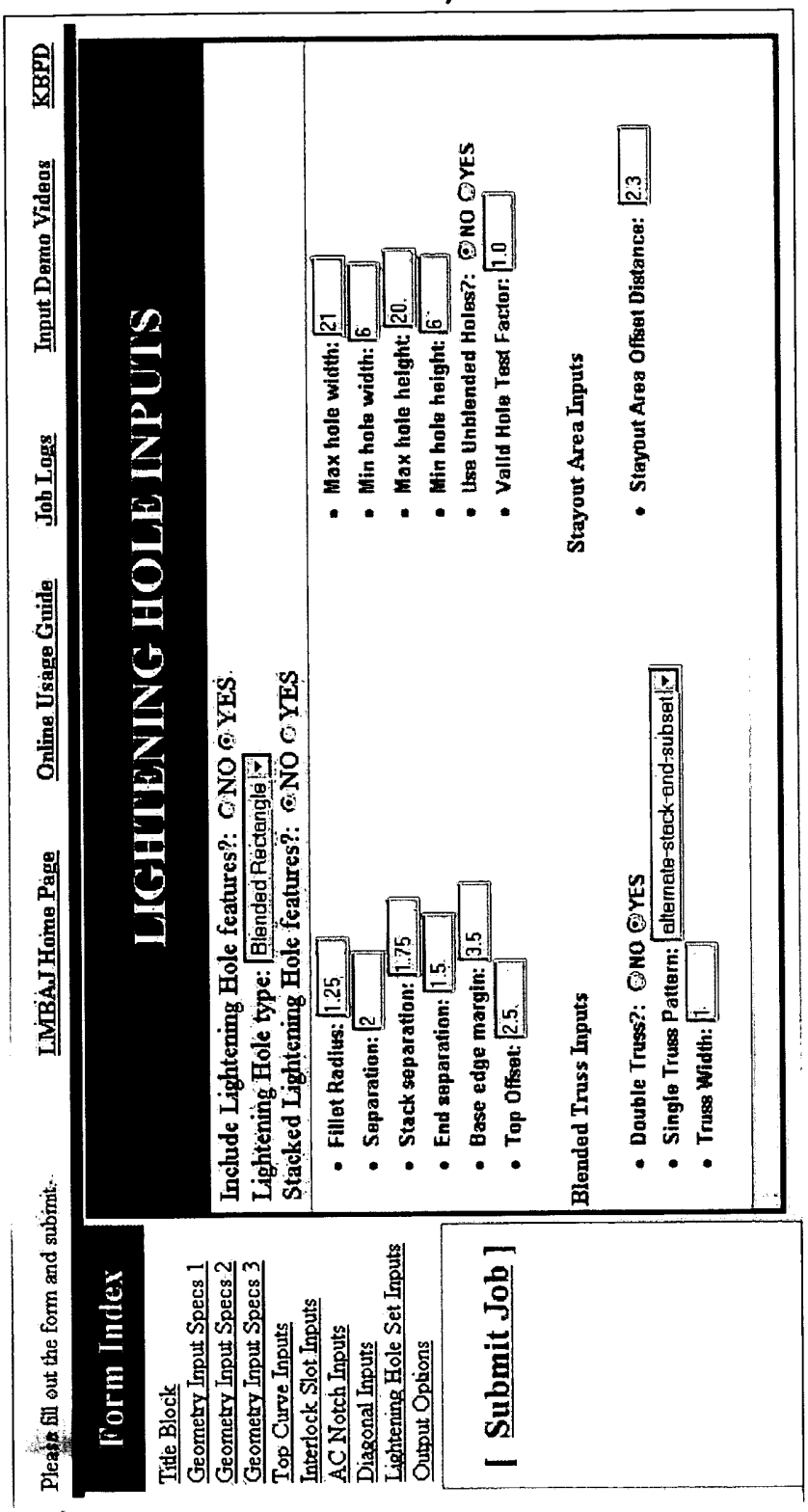
KBPD
Please fill out the form and submit.
Form Index
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
DIAGONAL INPUTS
All Diagonal Types:
Thickness: 1
Height: 5.0
Same Diagnoal Length Tol: 0.030
Interlock Slot Rounded Corners?: NO YES
Interlock Slot to Slot Clearance: 0.060
Interlock Slot Edge Clearance: 0.030
Snap-to Diagonals:
Solving Tolerance: 0.0005
Use 2nd Algorithm?: NO YES
Maximum Number of Iterations: 100
Solved Length Clearance: 0.0
Stayout Area Added Clearance: 0.0

FIG. 10D


Please fill out the form and submit.
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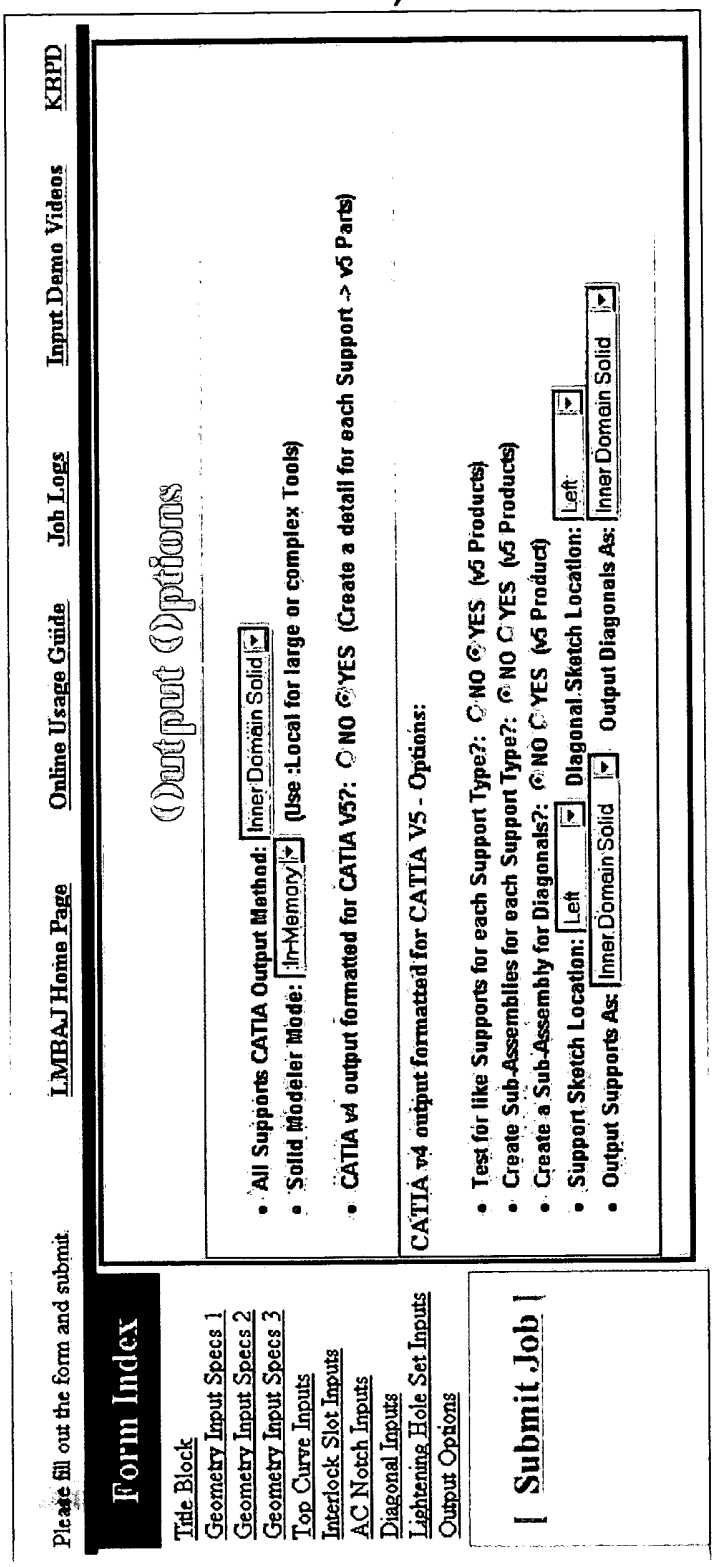
KBPD
Form Index
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
[Submit Job]
LIGHTENING HOLE INPUTS
Include Lightening Hole features?: NO YES
Lightening Hole type: Blended Rectangle
Stacked Lightening Hole features?: NO YES
Fillet Radius: 1.25
Separation: 2
Stack separation: 1.75
End separation: 1.5
Base edge margin: 3.5
Top Offset: 2.5
Max hole width: 21
Min hole width: 6
Max hole height: 20.
Min hole height: 6
Use Unblended Holes?: NO YES
Valid Hole Test Factor: 1.0
Blended Truss Inputs
Double Truss?: NO YES
Single Truss Pattern: alternate-stack-and-subset
Truss Width: 1
Stayout Area Inputs
Stayout Area Offset Distance: 2.3

FIG. 10E


Please fill out the form and submit.
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Form Index
Title Block
Geometry Input Specs 1
Geometry Input Specs 2
Geometry Input Specs 3
Top Curve Inputs
Interlock Slot Inputs
AC Notch Inputs
Diagonal Inputs
Lightening Hole Set Inputs
Output Options
Submit Job
Output Options
All Supports CATIA Output Method: Inner Domain Solid
Solid Modeler Mode: In-Memory (Use :Local for large or complex Tools)
CATIA v4 output formatted for CATIA V5?: NO YES (Create a detail for each Support -> v5 Parts)
CATIA v4 output formatted for CATIA V5 - Options:
Test for like Supports for each Support Type?: NO YES (v5 Products)
Create Sub-Assemblies for each Support Type?: NO YES (v5 Products)
Create a Sub-Assembly for Diagonals?: NO YES (v5 Product)
Support Sketch Location: Left Diagonal Sketch Location: Left
Output Supports As: Inner Domain Solid Output Diagonals As: Inner Domain Solid

FIG. 10F

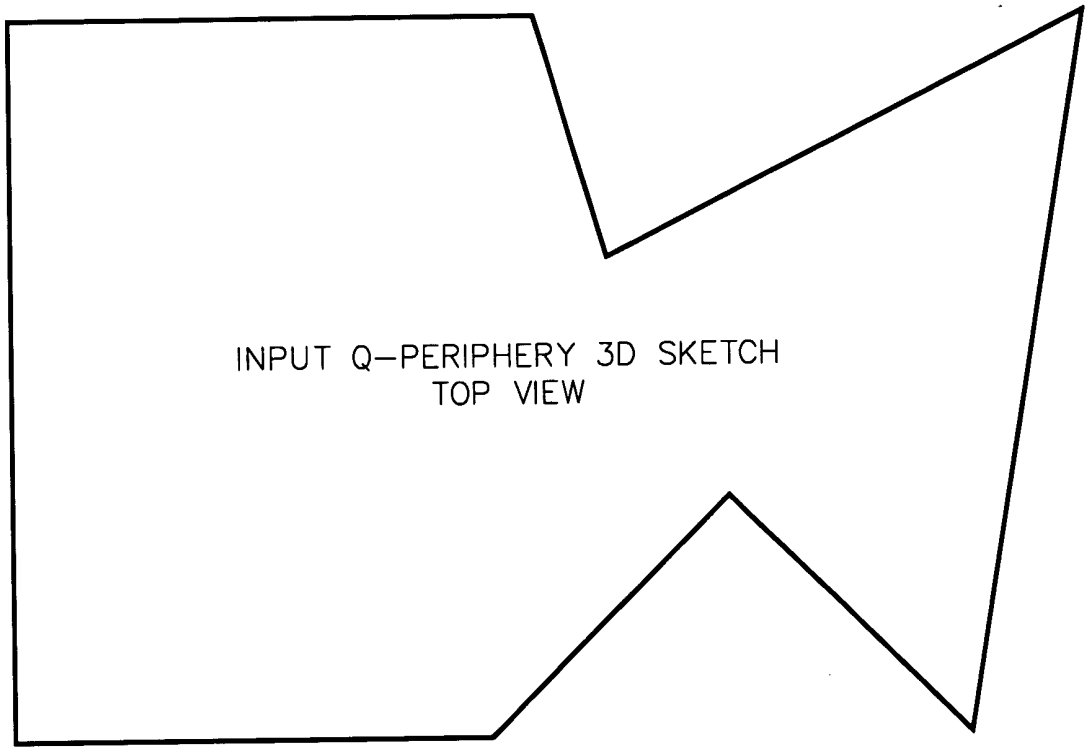

FIG. 11

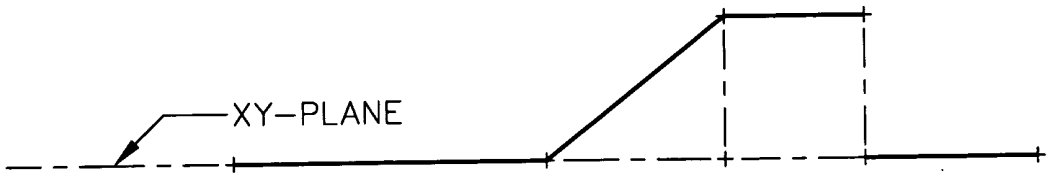

FIG. 12

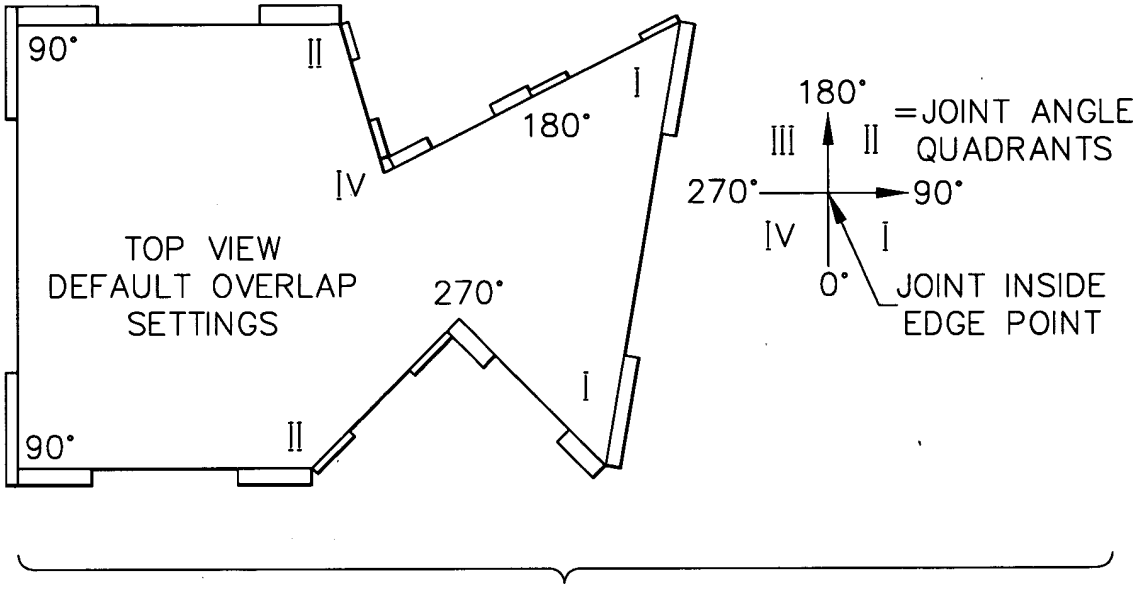

FIG. 13A

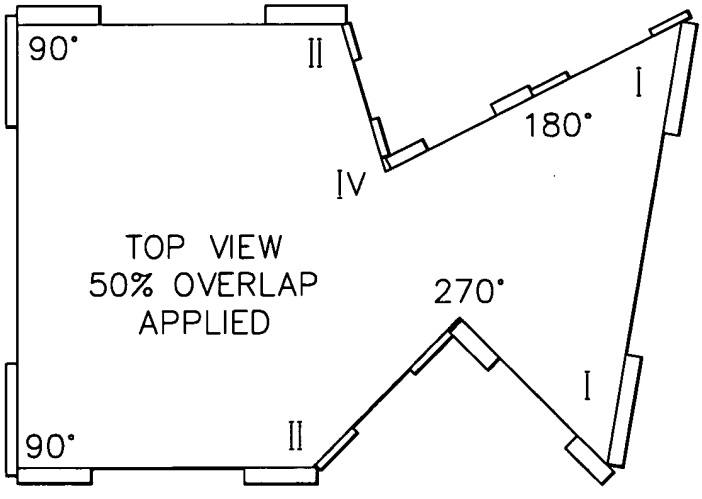

FIG. 13B

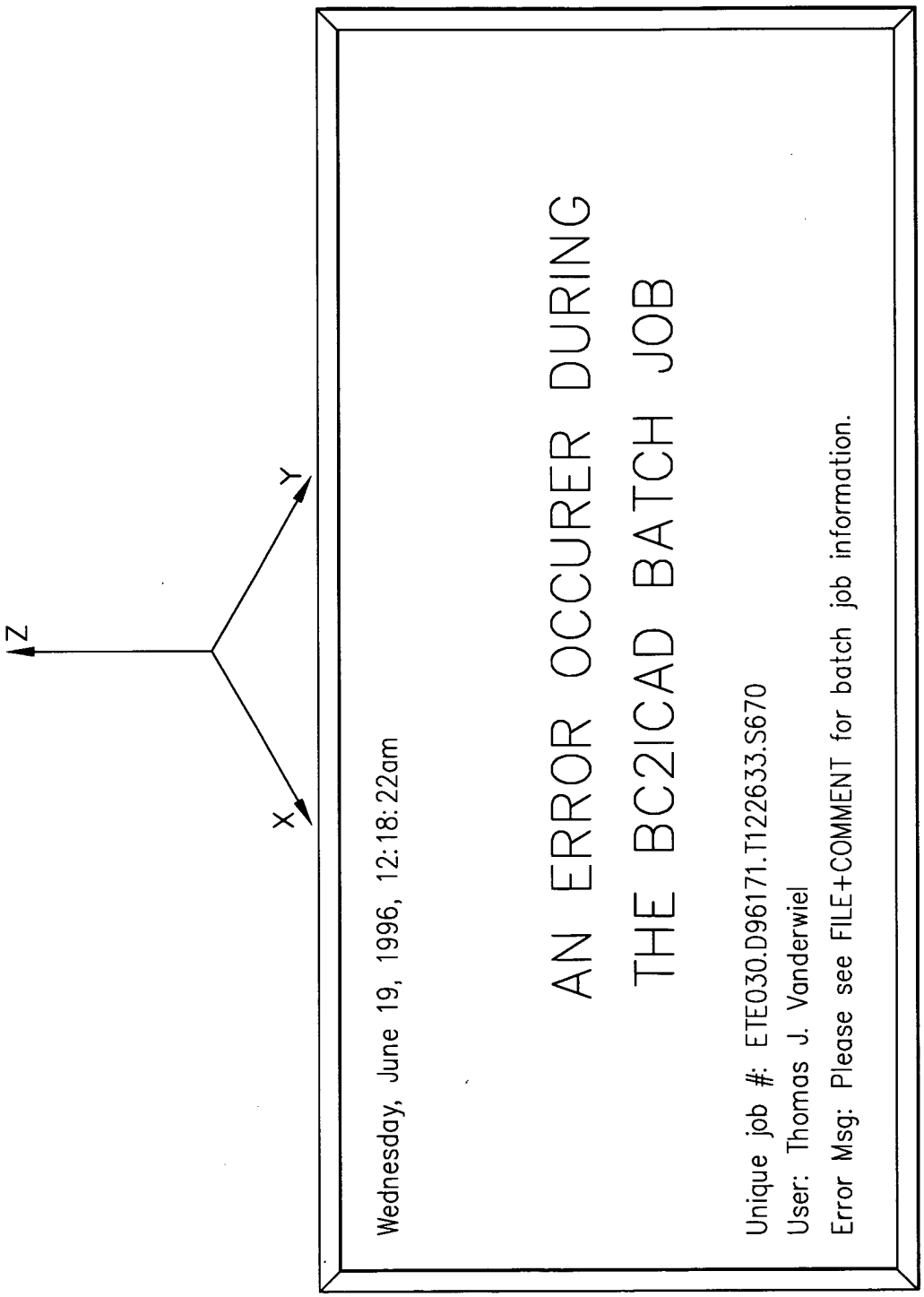
Z
Y
X
AN ERROR OCCURER DURING
THE BC2ICAD BATCH JOB
Wednesday, June 19, 1996, 12:18:22am
Unique job #: ETE030.D96171.T122633.S670
User: Thomas J. Vanderwiel
Error Msg: Please see FILE+COMMENT for batch job information.

FIG. 14

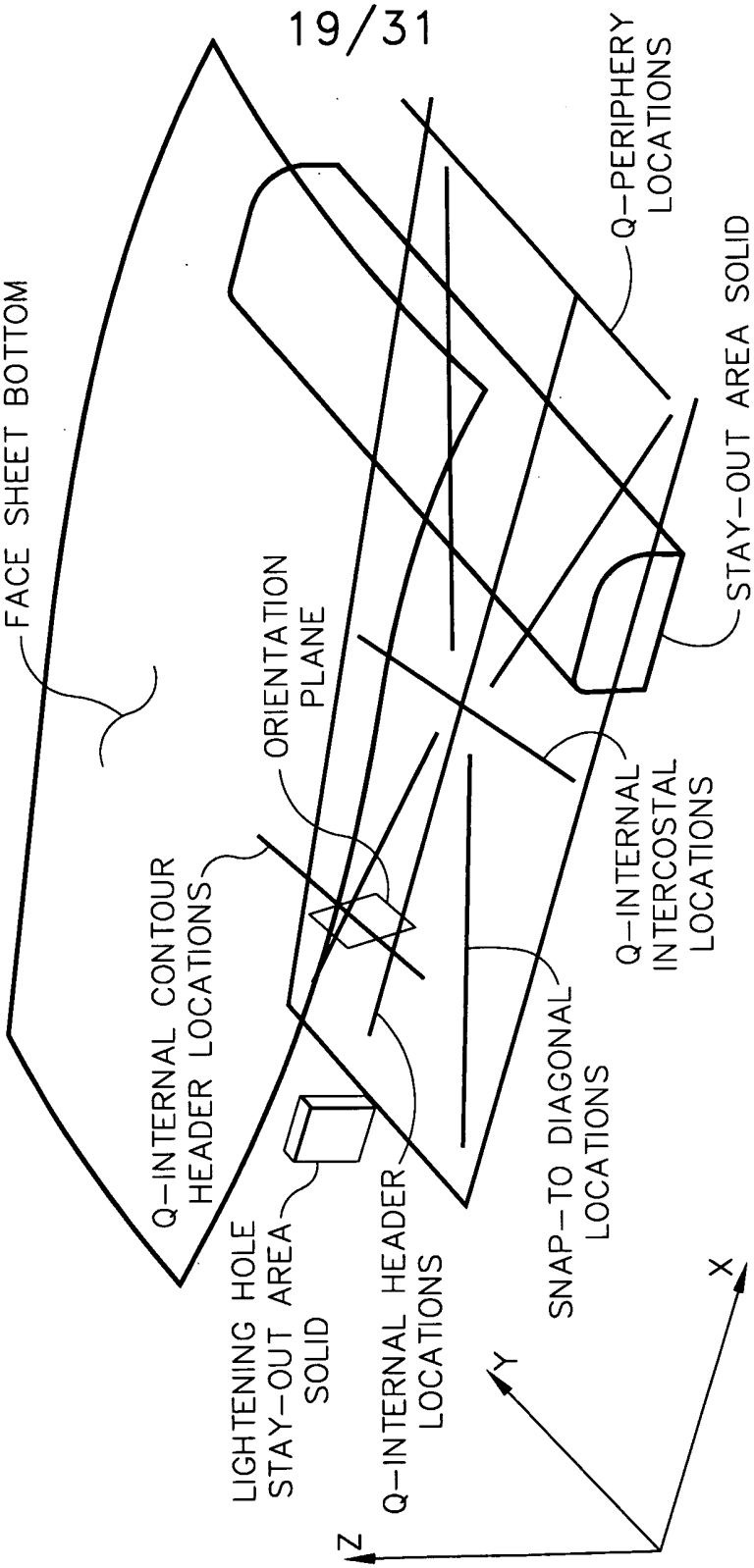
FACE SHEET BOTTOM
Q-PERIPHERY LOCATIONS
STAY-OUT AREA SOLID
ORIENTATION PLANE
Q-INTERNAL CONTOUR HEADER LOCATIONS
Q-INTERNAL INTERCOSTAL LOCATIONS
LIGHTENING HOLE STAY-OUT AREA SOLID
Q-INTERNAL HEADER LOCATIONS
SNAP-TO DIAGONAL LOCATIONS
Z
Y
X
QUICK 3D INPUT SKETCH

FIG. 15

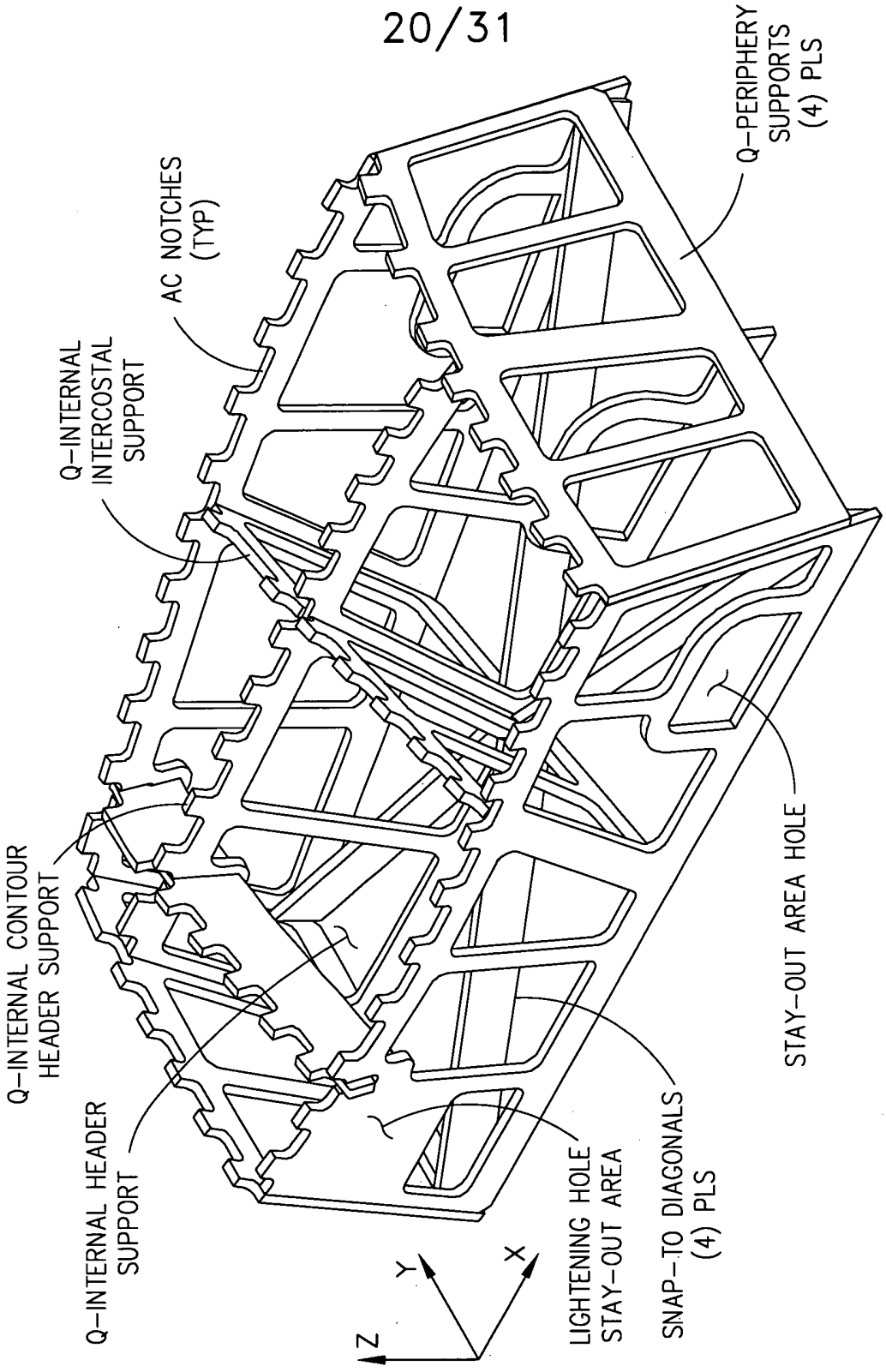
Q-PERIPHERY SUPPORTS (4) PLS
AC NOTCHES (TYP)
Q-INTERNAL INTERCOSTAL SUPPORT
Q-INTERNAL CONTOUR HEADER SUPPORT
Q-INTERNAL HEADER SUPPORT
LIGHTENING HOLE STAY-OUT AREA
SNAP-TO DIAGONALS (4) PLS
STAY-OUT AREA HOLE
Y
X
Z
3D SPACE OUTPUT

FIG. 16A

ITS
Intelligent Tooling System

ICAD Input Spec Sheet

Job Data

Date: 7/6/1999
Icad Version: 7.0.1
Application: Eggcrate Substructure Module
Version: 11
Name: John Doe
Organization: A-1021
Phone Number: 555-5555

Tool Info

Tool Code: LM
Tool Number: 123X4567-TEST
Sheet Number: 1
Sheet Rev Level: NEW
Part Number: 1
Tdr Tf Cs Number: T1234567

Input Attribute	Value
Periphery Support Thk:	0.375
Interior Support Thk:	0.25
Contour Seam Support Thk:	0.25
Contour Seam Support Depth:	4
Periphery Support Layer:	NIL
Interior Intercostal Support Layer:	NIL
Interior Header Support Layer:	NIL
Contour Seam Support Layer:	NIL
Reduce Bspline Segmentation For Output?	NIL
Reduce Bsplines To Lines For Output?:	NIL
Reduce Bspline To Lines Chord Ht:	0.01
Reduce Bspline To Lines Chord Ht Tol:	0.005
Ac Include Air Circulation Notch Features?:	T
Ac Notch Pattern:	FILLETED-NOTCH
Ac Min Separation:	2.0
Ac Min Notch To Notch Separation:	1.7
Ac End Separation:	1.0
Ac Notch Depth:	2.0
Ac Max Notch Width:	4.0
Ac Min Notch Width:	2.5
Ac Notch Fillet Radius:	0.5
Ac Default Fit Factor:	0.6
Ac Bottom Fit Factor:	0.6
Lh Include Lightening Hole Features?:	T
Lh Type:	BLENDED-RECTANGLE
Lh Fillet Radius:	0.5
Lh Max Hole Width:	22
Lh Min Hole Width:	6
Lh Truss Thickness:	1
Lh Stacked Holes?:	T

Page 1 of 2

ITS
Intelligent Tooling System

ICAD Input Spec Sheet

Job Data

Date: 7/6/1999
Icad Version: 7.0.1
Application: Eggcrate Substructure Module
Version: 11
Name: John Doe
Organization: A-1021
Phone Number: 555-5555

Tool Info

Tool Code: LM
Tool Number: 123X4567-TEST
Sheet Number: 1
Sheet Rev Level: NEW
Part Number: 1
Tdr Tf Cs Number: T1234567

Input Attribute	Value
Lh Stack Separation:	1
Lh Max Hole Height:	12
Lh Min Hole Height:	6
Lh Double Truss?:	T
Lh Single Truss Pattern:	ALTERNATE-STACK-AND-SUBSET
Lh Stayout Area Solids:	NIL
Lh Remove Holes That Touch?:	NIL

Page 2 of 2

FIG. 16B

2D Drew
(Input Spec Sheets)

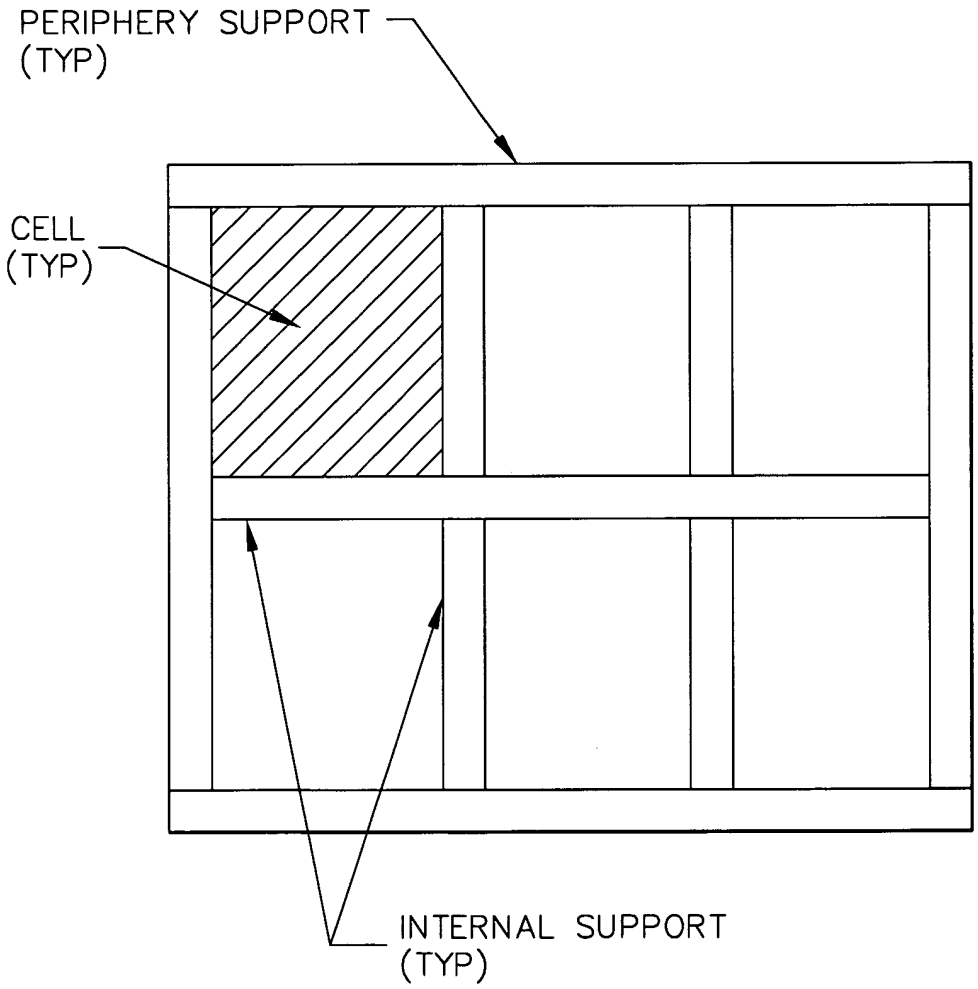

FIG. 17

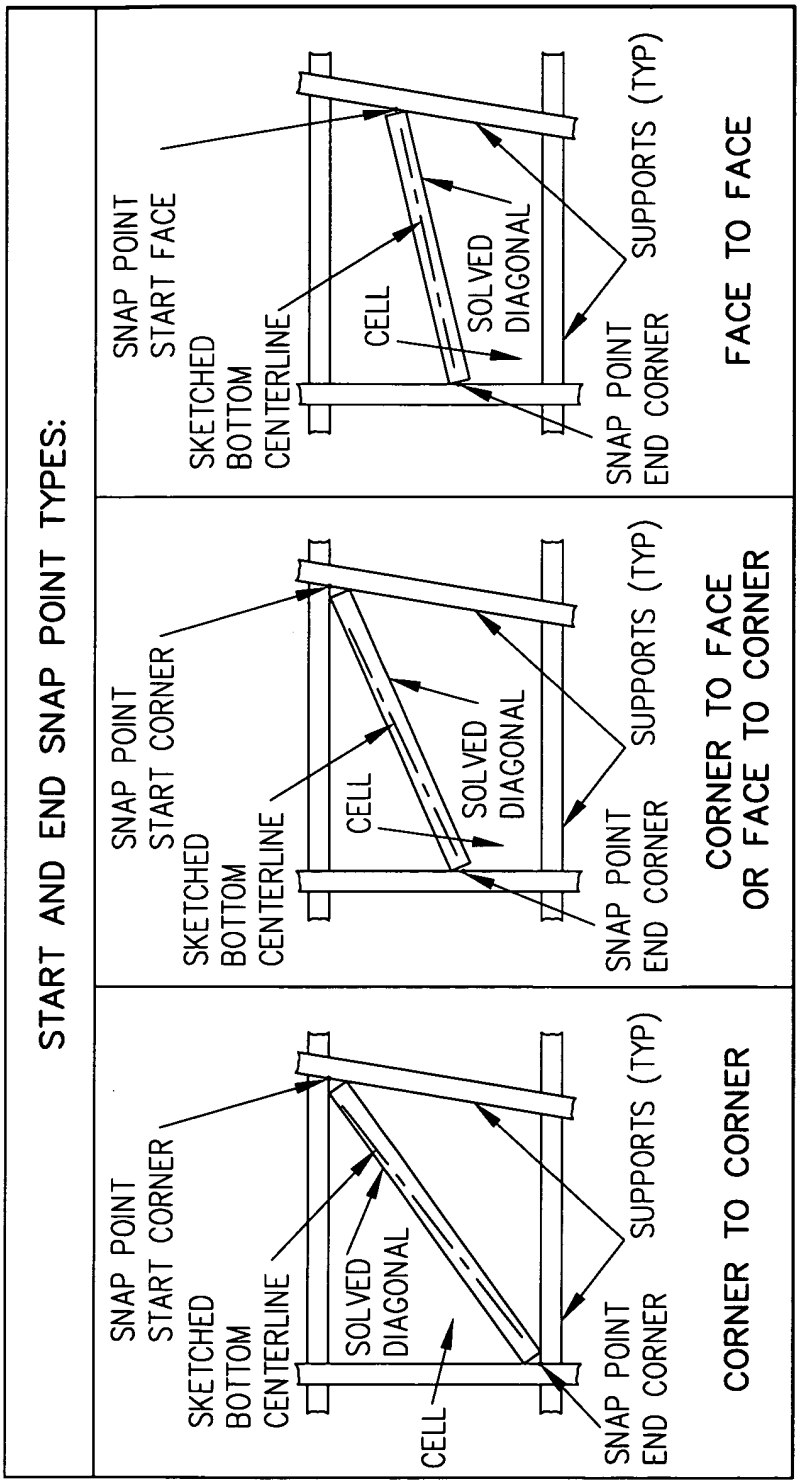
START AND END SNAP POINT TYPES:
SNAP POINT START CORNER
SKETCHED BOTTOM CENTERLINE
SOLVED DIAGONAL
CELL
SNAP POINT END CORNER
SUPPORTS (TYP)
CORNER TO CORNER
SNAP POINT START CORNER
SKETCHED BOTTOM CENTERLINE
CELL
SOLVED DIAGONAL
SNAP POINT END CORNER
SUPPORTS (TYP)
CORNER TO FACE OR FACE TO CORNER
SNAP POINT START FACE
SKETCHED BOTTOM CENTERLINE
CELL
SOLVED DIAGONAL
SNAP POINT END CORNER
SUPPORTS (TYP)
FACE TO FACE

FIG. 18

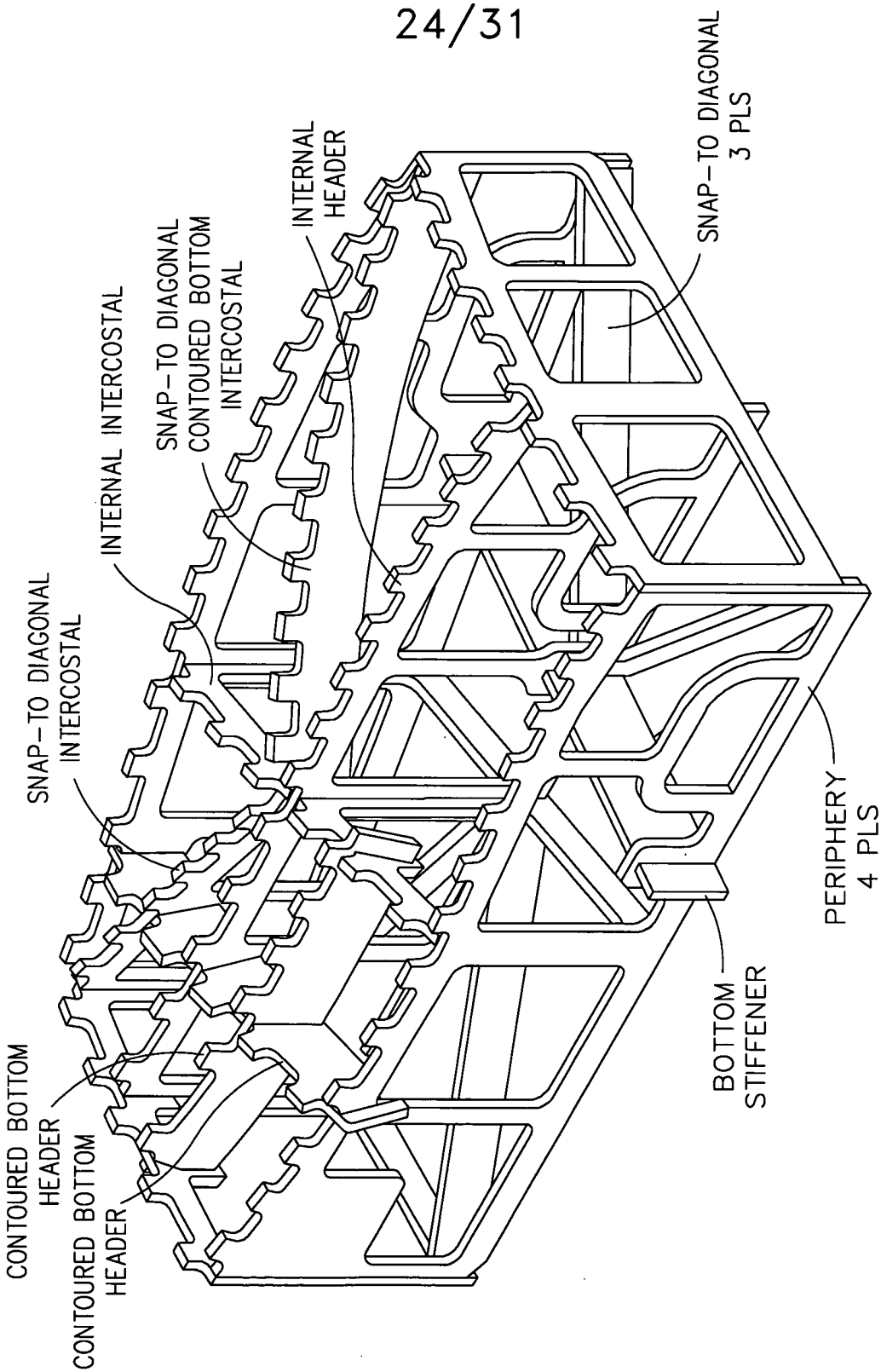
SNAP-TO DIAGONAL 3 PLS
INTERNAL HEADER
SNAP-TO DIAGONAL CONTOURED BOTTOM INTERCOSTAL
INTERNAL INTERCOSTAL
SNAP-TO DIAGONAL INTERCOSTAL
CONTOURED BOTTOM HEADER
CONTOURED BOTTOM HEADER
BOTTOM STIFFENER
PERIPHERY 4 PLS

FIG. 19

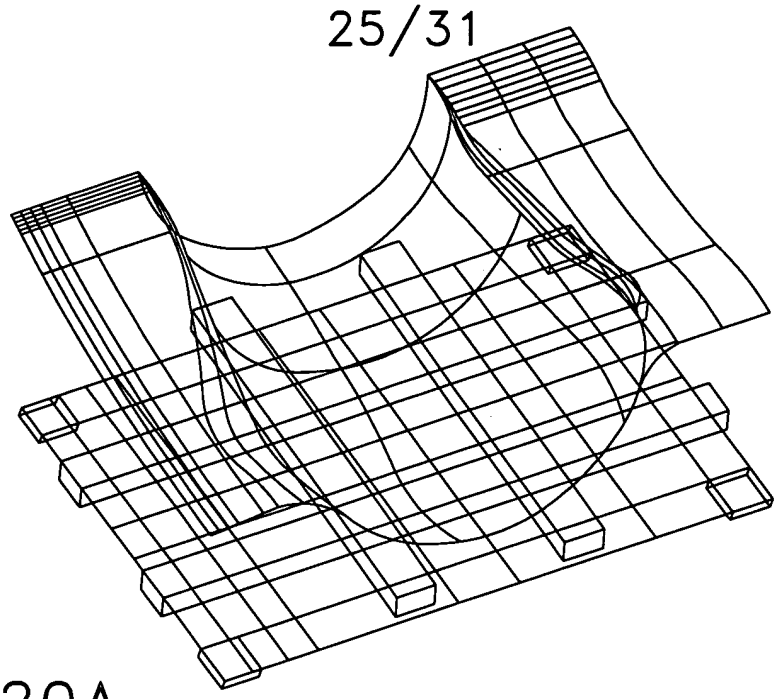

FIG. 20A

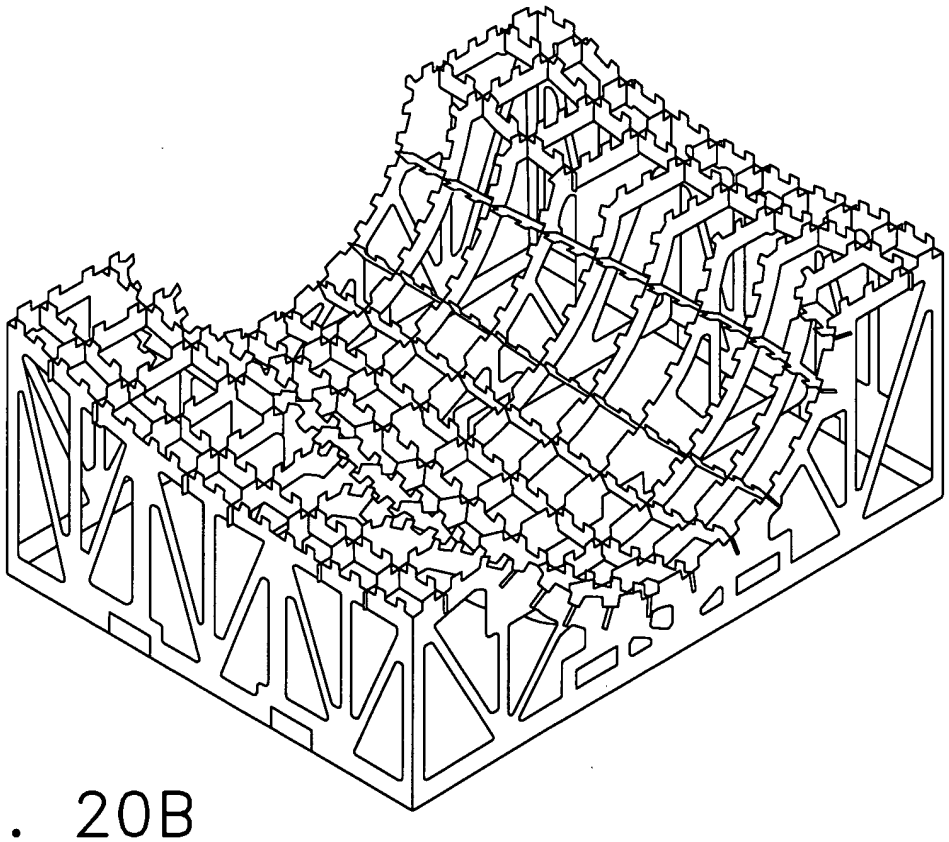

FIG. 20B

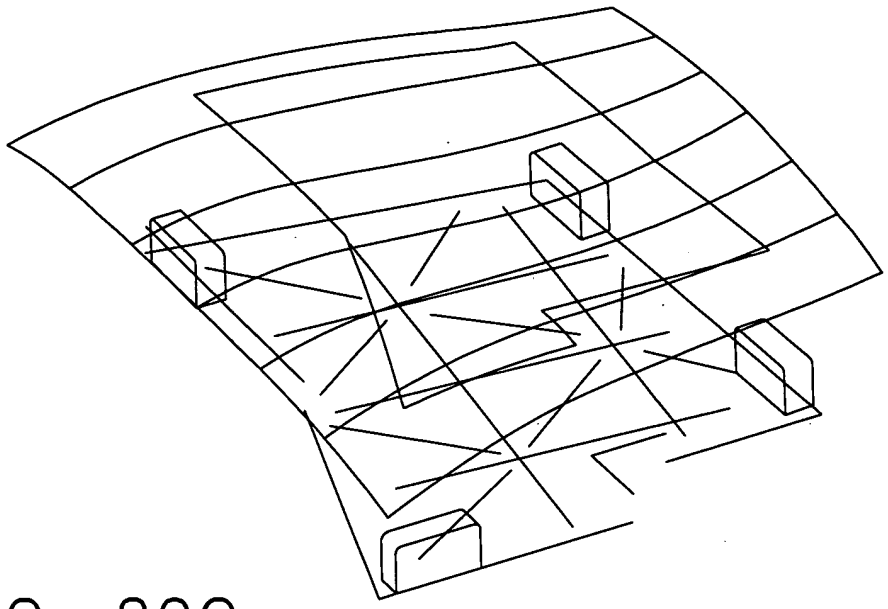

FIG. 20C

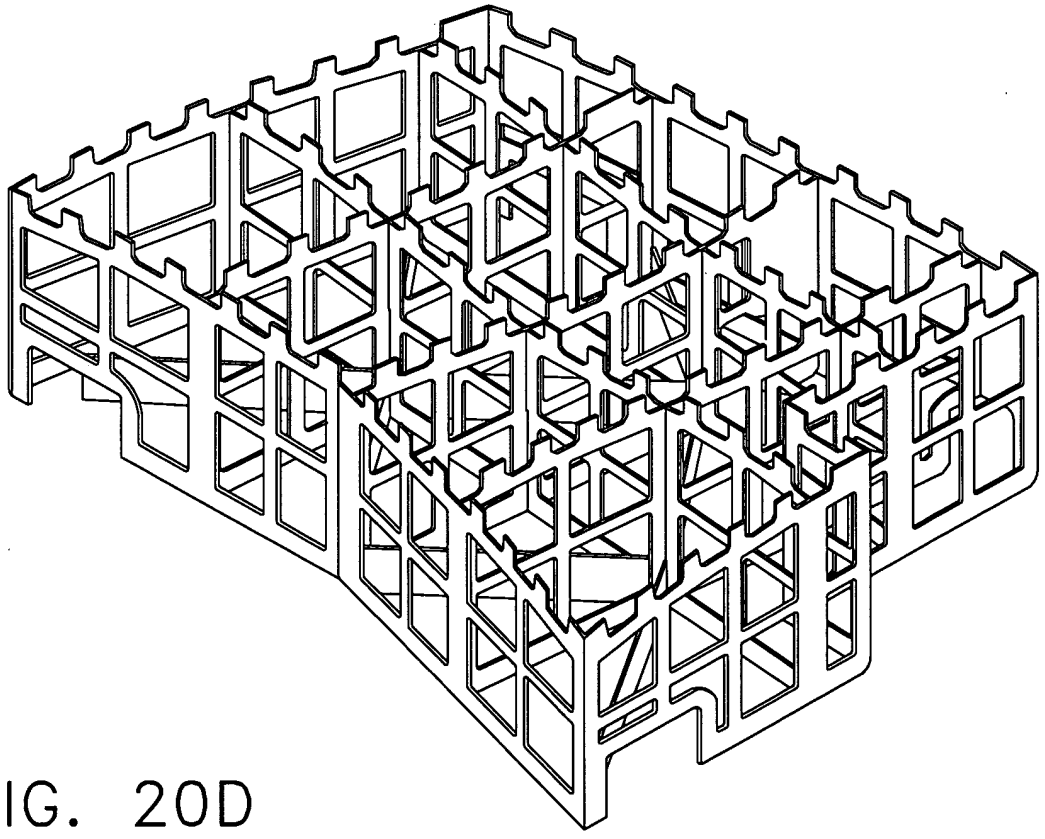

FIG. 20D

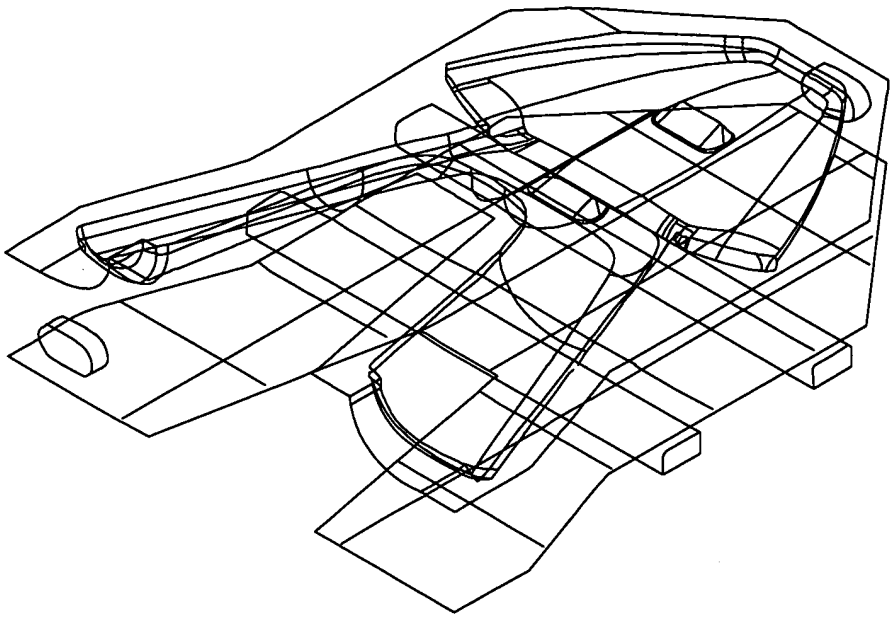

FIG. 20E

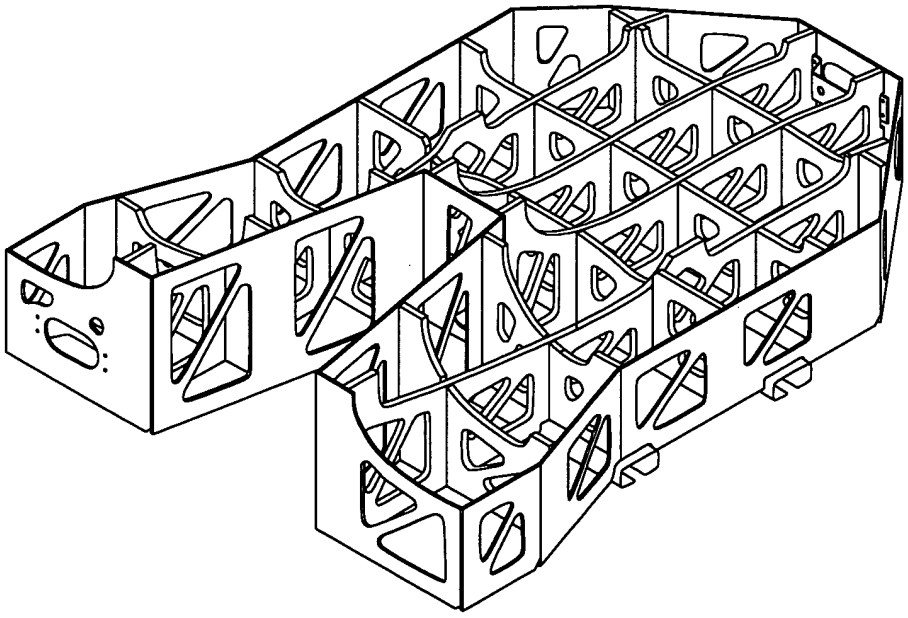

FIG. 20F

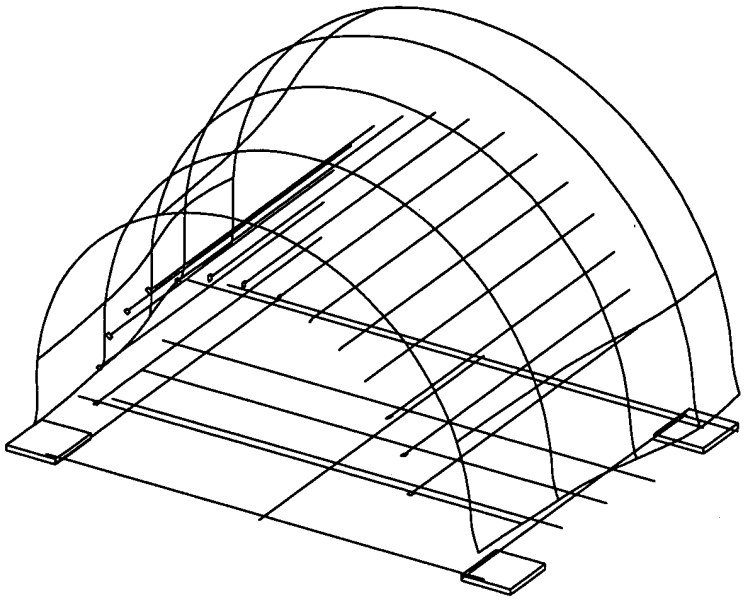

FIG. 20G

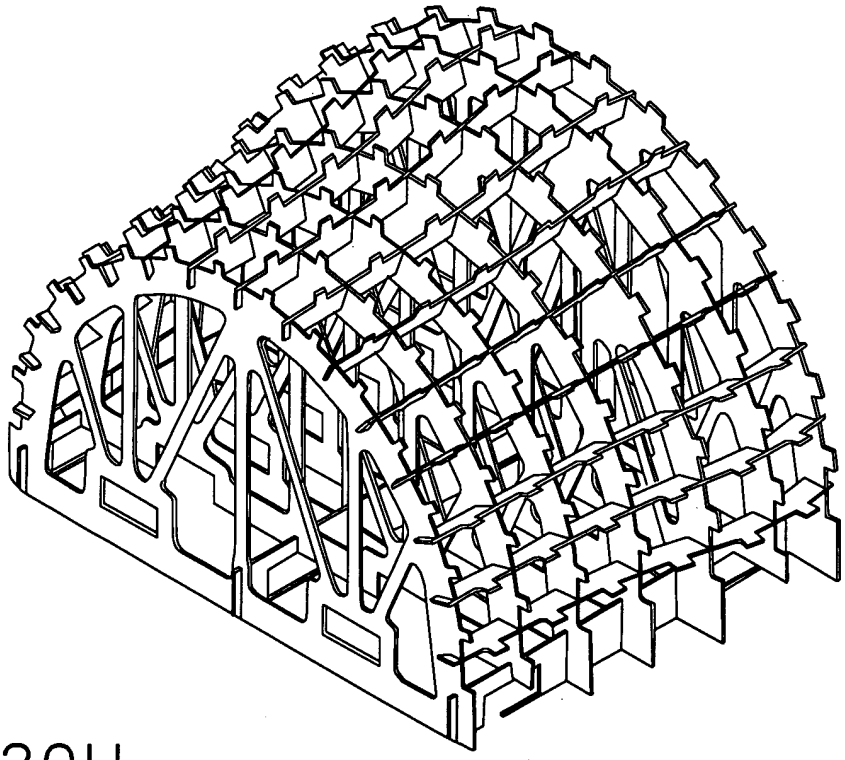

FIG. 20H

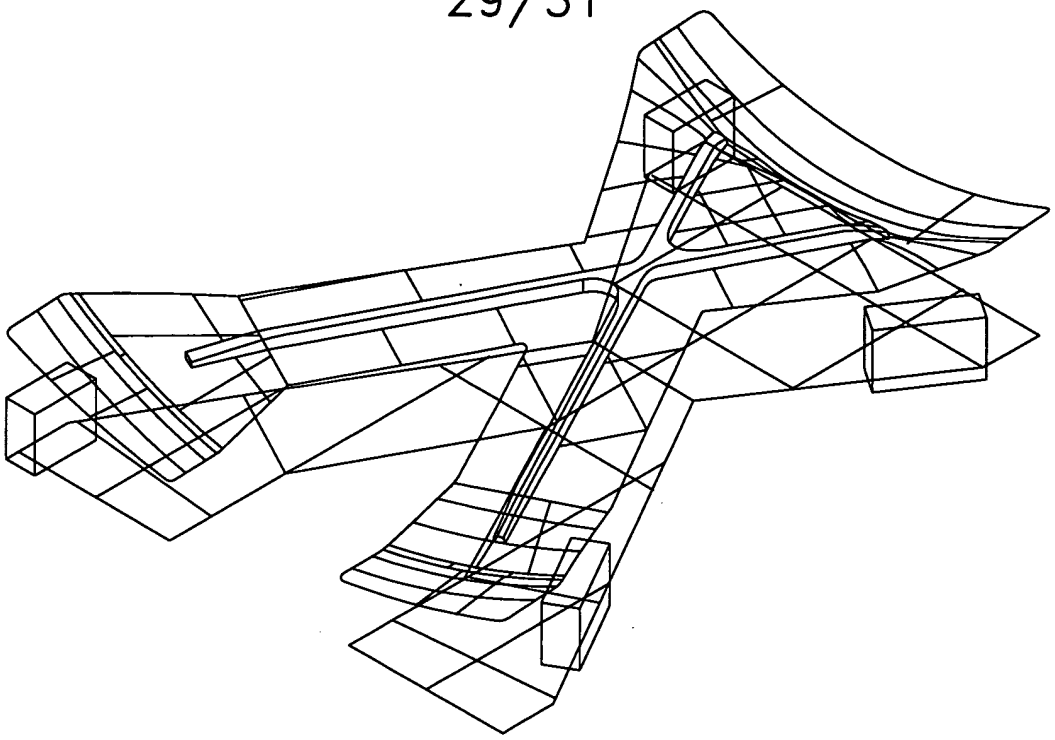

FIG. 20I

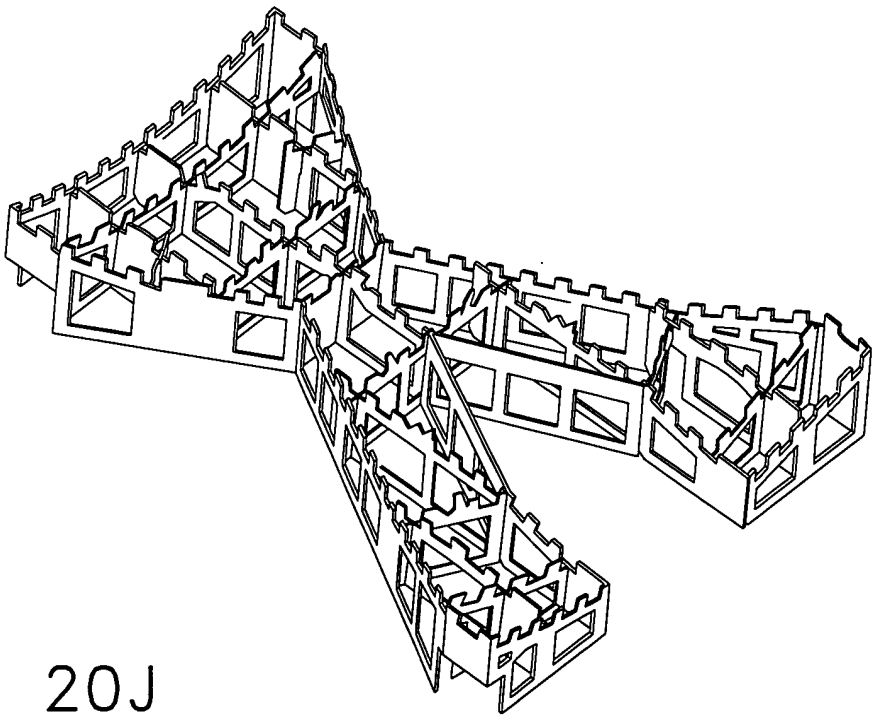

FIG. 20J

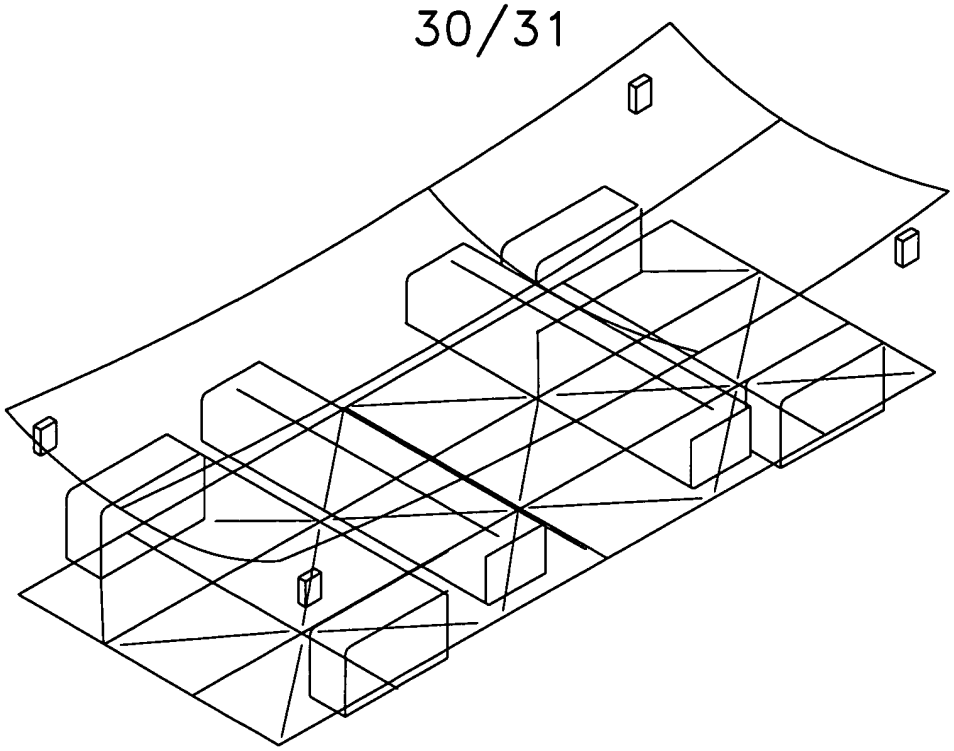

FIG. 20K

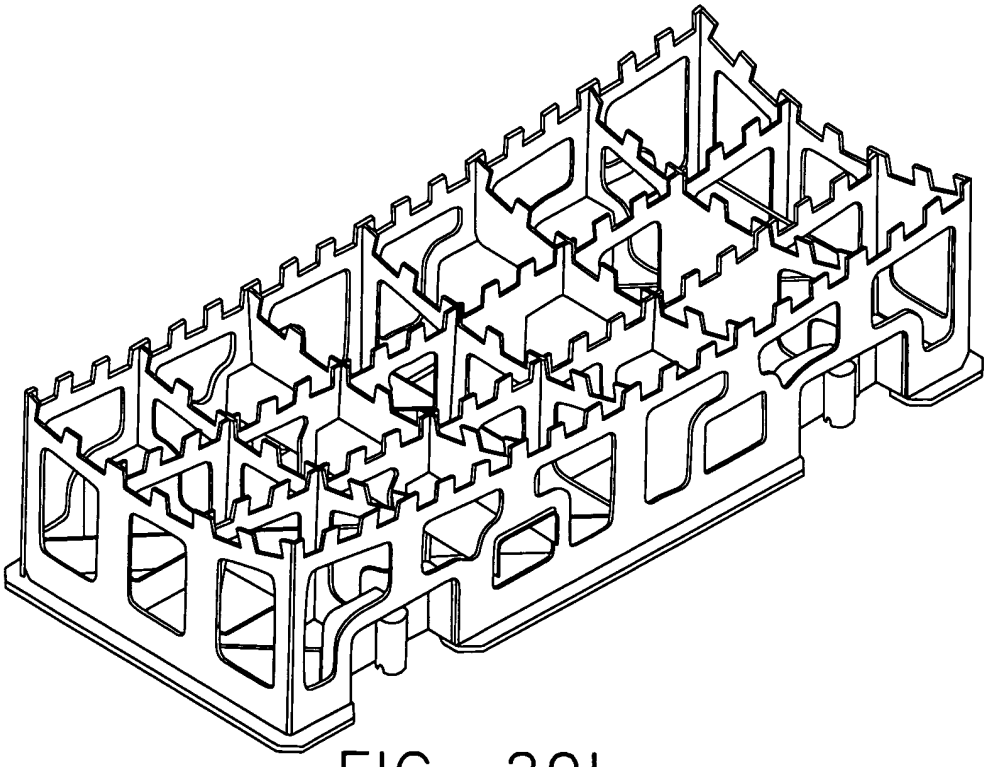

FIG. 20L

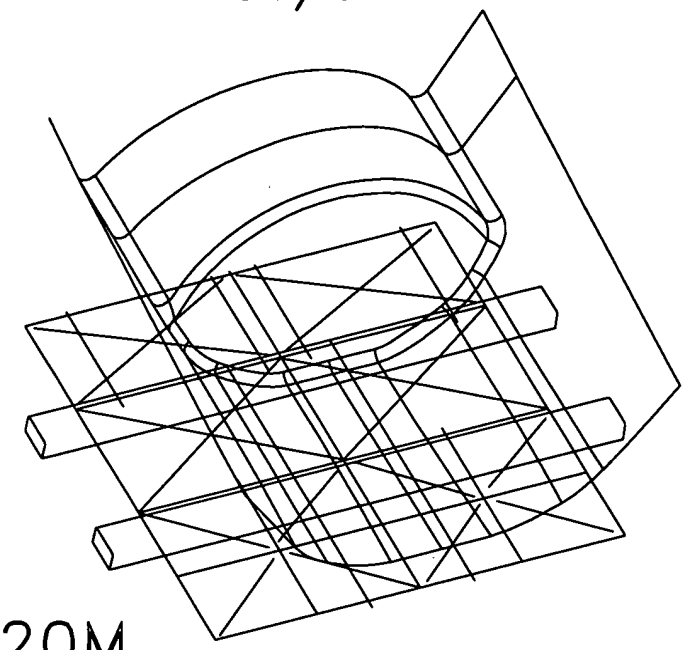

FIG. 20M

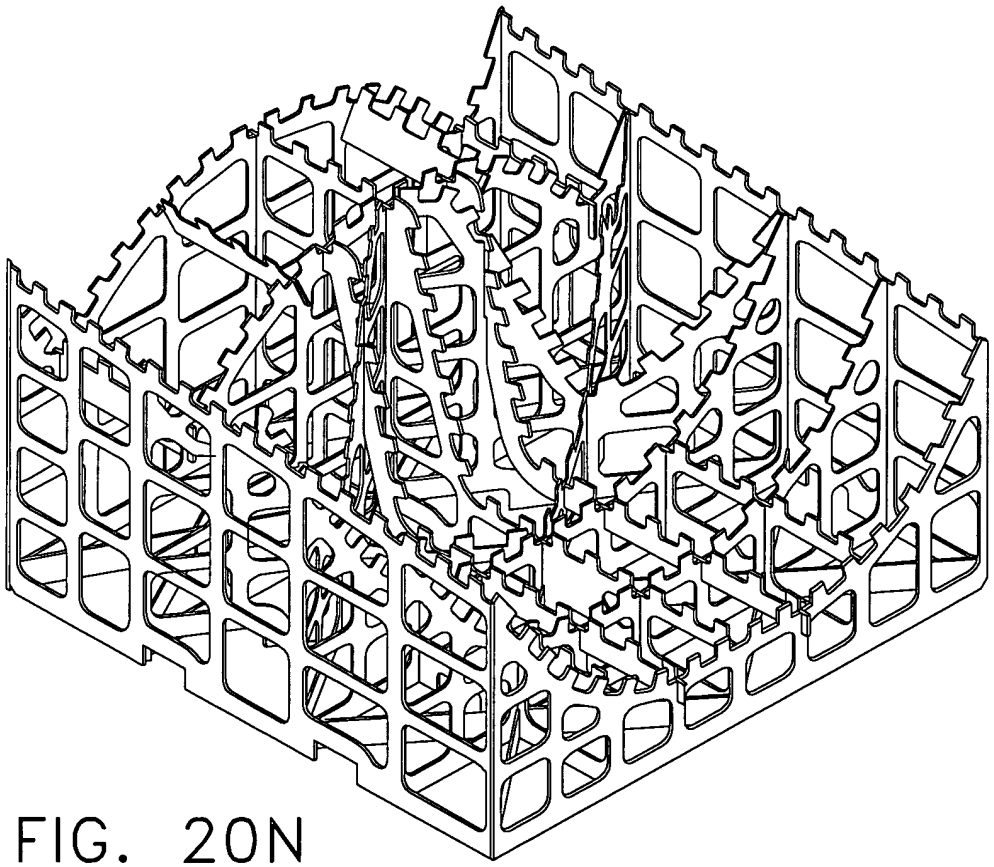

FIG. 20N